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THE HEALTH DEPARTMENT AND THE PRACTICING PHYSICIAN*

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THERE ARE MANY truisms in preventive medicine. There are some speculations. All the results of science are by no means molded; much is in flux. In certain fields of health administration we have made false beginnings, which must be untangled and started anew. Such a condition is but natural since a continuous change is taking place in our appreciation of the laws of life.

By all means, we are justified in reaffirming our confidence in education as a tool for the health officer. But is it not true that education of the public cannot precede knowledge, and in turn accurate knowledge is frequently wanting!

As we review the great change wrought in the life expectancy of the mythical "average man," the precipitous decline of the infant death rate so marked in communities blessed with well organized health and social agencies, the abolition of many infectious ailments which terrified our parents and grandparents, we must pay tribute to the power of education and its ability to conserve human life and happiness.

Do we not as sanitarians generally agree that the slower method of enlightenment and coöperation is a producer of more lasting results than the old strong fisted system of two decades ago which made no pretense of telling the public what it was all about? Dr. Chapin has so ably disclosed the entire situation that it requires no elaboration, and his declaration and outline of the development of public health administration have satisfied the appetite of many a hungry sanitarian.

Is it not reasonable to say that the ultimate object of public health work is to conserve life and energy so that we may live longer and fuller lives? Have we fulfilled the mission of life by merely reproducing the race, or should we not make a further contribution by assuring a fuller and more efficient life for those who follow? Be the objective remote or immediate, there can be no other course than to impart to the laity those dictates of science, the practice of which, results in a lowering death rate. We find throughout the land unanimity of purpose but vast variation in application. This brings us, therefore, to our subject—the intercoöperation between the practicing physician and the health department.

PROBLEMS AND PROCEDURE OF HEALTH OFFICER

There seem to be two general types of circumstances confronting the health officer. First, there is that period during which the administrator is not harassed with an epidemic condition. There are also those phases of the problem which

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are not subject to contagious influence, such as the correction of physical defects, nutrition, habit-forming clinics, maternal hygiene, et cetera. All such activities will remain in the first class, thus reserving for the second group only the epidemic or emergency situation.

There are also at least two methods of procedure now in use in different parts of the country. (Parenthetically, it can be added that a splendid opportunity exists for a study of comparative results. There are, however, many by-products which must be considered and evaluated, but some of these have no direct association with public health. One frequently confronted may be expressed as paternalism.) But let us first of all describe the two procedures which apply to every activity of the health department which involve education and the coöperation of the private physician. We shall restrict ourselves first to a discussion of a program to secure the immunization of the preschool child against diphtheria.

CAMPAIGN AGAINST DIPHTHERIA

In one group of cities the health department has made a determined effort to reach directly as many preschool children as possible, irrespective of the financial condition of the parent or guardian. Special clinics have been opened, literature is mailed to the mother when the child is six months old, and a nurse may visit the home urging that the child be brought to a free clinic. Field nurses stimulate the attendance of young children, and a concerted drive is made upon the child during the months preceding his admission to school. Unofficial agencies and the insurance companies have done masterly work in encouraging clinic attendance, distributing literature and issuing reference cards for admission to the free clinics. Such a campaign is usually accompanied by much newspaper notoriety, paid advertisements, hand bills, and posters on street cars and sign boards. Such a procedure is indispensable at times of impending epidemic.

In other cities the health department has established a very definite ruling that no individual financially able to engage the services of a private physician will be admitted to a public clinic, even for such prophylactic service as diphtheria immunization. The general educational program is the same as in cities of the first group, except in so far as the clinics are concerned. The nurses of the health department in visiting the home, invoke the interest of the mother, painstakingly explain what toxin-antitoxin is, and wherein it differs from antitoxin, describe the Schick test, and portray the need of its application as a means of ascertaining the child's resistance to the disease. Efficient employment of the art of the crafty vendor of books, coupled with an alertness and eagerness to give prompt and sound reply to all questions, will almost invariably result in an expression of maternal interest and even enthusiasm. The mother is advised to consult the family physician and obtain the toxin-antitoxin treatment for her children at the doctor's office. There is no invitation to come to a free clinic. The nurse makes a list of all the preschool children in the family and notes the name of the physician whom the mother has mentioned. A copy of the list will be sent to the doctor, and the medical men of the area have previously been brought together, the technic of toxin-antitoxin and the administration of the Schick test demonstrated, and the entire campaign outlined. The biological preparations are provided by the department of health, and for those financially responsible the physician makes his usual office charge, and for those unable to pay the health department reimburses the physician for his time without the knowledge of the patient and his family.

WHEN PHYSICIANS LAG

There is much to commend a program of this character when the exigencies of the situation do not demand haste. The general practitioner of medicine is too

frequently slow in keeping abreast with the advancement of preventive medicine. While we seldom meet the man who treats diphtheria with the elaborate synthetic compounds and irrigations of pre-antitoxin days, we do find vast numbers who have never read a Schick test. Is it not well that these physicians should conduct their practice with the full advantage of modern scientific methods, and how better can the health officer encourage this result than by creating a demand?

The physician will be forced to practice good medicine, or else he will lose his patient. There is great danger that the enlightenment of the laity will outdistance the physician's own advancement.

SPREAD OF EDUCATION

The question is often asked whether there has been a reduction in the prevalence of the venereal diseases since the general inauguration of educational programs and the establishment of clinics. The majority of us would, doubtless, answer in the affirmative. Some of our colleagues would even uncover statistical evidence to lend weight to their convictions.

There is one certainty—millions of people have been taught good medicine. There has been a substitution of mercury and salvarsan, needles and syringes, clinics, nurses and doctors for pills and sedatives dispensed by drug clerks and quacks, superstition and ignorance. The clinic patient now realizes that if he is to receive relief from his syphilitic lesion, proper treatment must be given, and the drug store pill-by-mouth prescription is no competent substitute.

The health department is making a generous contribution to the practicing physician in this field. Thousands of cases find their way to the doctor's office, that formerly drifted into the hands of charlatans, the faker, and the unscrupulous imposter. In turn the health department by showing the example is creating a demand for better practice in the office of the family physician. Woe unto him who does not keep up with the times, for he will gradually lose public confidence.

There are other worth-while features in an educational program which involve the active participation of the family physician. Numerous essayists have told us that the family physician is disappearing or already gone. Why not do our little share toward his return? Or if we are too late in our endeavor, let us introduce our people to the well trained specialist, who is taking the place of the family doctor. Let us recreate the habit of looking to the doctor for medical advice. The chiropractor, the naprapath, the numerous cults and isms will suffer, but the public will benefit and the health officer can soon boast of a lower death rate.

PUBLIC VERSUS INDIVIDUAL DUTY

To deprive an individual of responsibility, to make man a mere part of an intricate machine, is a modern tendency. The laborer who tightens but one small part of an automobile as it is conveyed on an endless track through the assembly room of a large manufacturing plant is no mechanical match for the expert who can dismantle and reassemble a giant locomotive. There is a trend to follow the procession, to learn no more than necessary, to ignore altogether those things which others will do for us. Many parents would without doubt willingly award their children to the State at birth to be carried through that critical period of childhood, to be examined and made fit without physical handicap for the school years, to be guided and directed in their mental and bodily development. There might be reservations that the child belongs to the parents during periods of relaxation and recreation, but with such exception the government would accept the sole responsibility of developing a vigorous, healthy, and fully educated adult. Surely this is not an American ideal. We must not lose all individuality. The public must be taught its responsi-

bility and the individual should be encouraged to fulfill his duty.

Elaborate descriptions have been published of the teacher or the nurse, or the Virginia, or the what-not method of inspecting school children. Ultimately the child is referred to the family physician no matter what the initial procedure may be. Why not then start with the doctor? Inaugurate a system whereby the child will come to school in the fall fortified with an examination blank filled out by the family medical counsellor. It will not come to pass all at once. It takes years of patience and constant prodding to bring about reform. A beginning can be made, however, through the stimulated interest of the practitioner and a well balanced educational program aimed at the school child and his parent.

These same general principles of coöperation between the health department and the physician apply to other phases of health work, such as the venereal disease clinic, and the prenatal and child welfare clinics. The health department must take the lead, must pave the way for the public mind, must prepare the soil for the seed. But, save for special service for the indigent, its ultimate goal should be a community with sufficient enlightenment and a medical profession so well trained in preventive medicine that there remains little for the health officer to do. True it is, that epidemic conditions and problems of paramount character require special treatment for a short time, but let us not forget that for ultimate success we must make a health officer of virtually every practitioner of medicine.

DISCUSSION

Matthias Nicoll, Jr., M.D.: In discussing this paper I do not know that I can add much to what the speaker has said. I agree with him entirely except that I would go a little further than he has in advocating the cultivation of a medical profession in all procedures of protecting public health. This subject of the relationship between the private practitioner and the public health official is being discussed with more and more insistence. It is a matter which must be faced and must be solved in some way sooner or later. Now Dr. Vaughan spoke about the methods practiced in some cities, not only in the case of an emergency—where I will agree with him the health official should not only take the lead but probably do a great deal of the work—but also during times of non-emergency, where the health department is carrying on toxin and antitoxin campaigns, and practically doing all the work, immunizing persons who wish to be immunized, irrespective of their financial and other conditions. Time will tell whether in such places the ultimate results are better when the second system is followed—that of endeavoring to enlist in every way the coöperation of the medical profession. I do not think we have any statistics regarding the efficacy of those two systems at the present time. Even if it were shown that the official method of carrying on a campaign of that kind—the purely official method, having all the work done under official auspices—did result in a greater number of immunizations, the gain would be far offset by the ultimate loss of public health administration.

What I have to say about doing public health work comes from the heart. If one will look at what has taken place in various specific procedures in administering various specifics for the control of disease, he will soon discover what the tendency has been. For example, take the oldest specific known, the vaccination against smallpox. What has that become? When I was a child the family physician saw to it that his patients were immunized against smallpox. How many do it now? Practically none. The vaccination against smallpox has of necessity and by the consent or lack of interest of the medical profession relapsed into a public-health function, with the result that in the State of New York as well as in other places, were it not for Dr. Harris's city and my own native city where he does immunize them, and the larger cities up state, and the law which permits me to declare an epidemic of smallpox and forcibly immunize, I have not the slightest doubt that New York State would be constantly overrun with smallpox.

The typhoid antitoxin has also fallen into disuse. Very few think of it. In other words,

it is to a certain extent and possibly largely the fault of the medical profession that they have gradually let these things go out of their hands. Take our latest campaign, the anti-diphtheria campaign. What is going to be the history of it? Are they going to let that go, too? Are they going to make it an official function, or are they going to do their part? I personally wish to place myself on record as believing that no public health official, however competent or highly endowed with funds he may be, or however qualified his personnel, can carry on the conduct of public health from first to last, from the top to the bottom, without the active coöperation of the medical profession, and it is a serious mistake to adopt any other policy.

DANGER TO FOODSTUFFS FROM THE USE OF FIRE CHEMICALS

DURING the past 2 years 3 children and 1 adult have been made seriously ill after eating food or candy which had been wet with chemicals used by the fire department at fires in foodshops. In each case the physician's diagnosis indicated poisoning by sulphuric acid. These cases were responsible for an investigation covering the past 6 months, and although pathological determinations will be made when opportunity offers, the results chemically, clearly indicate thus far, a greater danger to the public than is generally recognized by health officials.

The ordinary fire extinguisher usually contains a bottle of concentrated sulphuric acid suspended over a solution of about 2 gallons of bicarbonate of soda. The apparatus is inverted thus throwing the acid in contact with the soda solution and the following reaction takes place:

$$\text{bicarbonate of soda} + \text{sulphuric acid} \text{ yields } \text{sodium sulphate} + \text{water} + \text{carbon dioxide (gas)}$$

From the above reaction it is apparent that the gas formed forces out the liquid containing glauber salt and water. The reaction should yield a neutral solution of glauber salt plus the carbonic gas. From our observations upon material that had been sprayed with the chemical solution it was apparent that some free sulphuric acid had not been neutralized by the soda. This was determined by the ordinary methods used for the detection of free sulphuric acid, namely, drying of the wetted material upon a water bath. The drying upon a water bath caused concentration of the acid until it attacked the organic matter present causing a charring of the material. This test proved without question that free sulphuric acid was present. A test for combined sulphuric acid was then made using barium chloride test solution. This test was also positive showing the presence of sulphuric acid as the sulphate which of course should be present.

Recently a fire caused considerable damage in a store adjoining a candy store and several lots of candy became soaked with chemical solution. Samples of the several lots were taken and dried carefully so as to prevent charring due to heat, and 4 of the 5 lots showed the presence of free sulphuric acid. One might reason that if free sulphuric acid is sprayed together with the salt solution that it should destroy everything with which it comes in contact. The answer is that the excess of water used to fight fires so dilutes it that it weakens or lessens its corrosive action. However, if the material that is soaked with the solution is dried carefully using heat the presence of the acid is easily found.

In view of our findings we have felt justified in condemning all foodstuffs for edible purposes following fires at food shops where chemicals were used. It seems pertinent, therefore, that health and food officials give this matter more serious consideration.

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THE EFFECTS OF SILICA DUST UPON THE LUNGS*

PART I

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IT MAY be safely stated that breathing any dust in sufficient concentration and for long enough time is harmful. Some dusts, such as those of lead, mercury, or arsenic are known to be poisonous; others may produce bronchitis; and still others, such as silica dust, produce fibrosis when breathed.

The harmful effects of breathing silica dust have been recorded from the time of Hippocrates, and its effects are known to exist among workers in practically all of the hard rock mining districts of the world as well as in many other industries.

THEORY OF ACTION OF SILICA

A number of theories are given as to why silica or quartz dust is the most harmful of those classed as non-toxic. The one to be given first and still accepted by many is the physical characteristics of the particles of dust, their sharp knife-like and needle-like form, and their insolubility. But it has been pointed out that some dusts having these physical characteristics, such as carborundum,[1] do not readily produce fibrosis. Furthermore, if the harmful effects are due to the ability of the particles to penetrate tissues, they should penetrate all soft body tissues, and this has not been found true. Dr. Haldane[2] notes that silica dust without sharp and pointed particles, such as precipitated silica, heated enough to dehydrate if inhaled will cause changes similar to those produced by quartz dust.

Some investigators think that silica exerts a toxic action upon the tissue cells. In support of this, Myers[3] found that silica dust collected in the mines of the Joplin-Picher district is soluble in water. Dr. Mavrogordato[4] reports that silica is soluble in weak alkaline solutions similar to body fluids. He concludes that the solubility and chemical activity of silica are of great importance, and that hardness and sharpness are of but little importance in causing silicosis, also that ultramicroscopic particles or chemically inert dusts are not dangerous. Dr. Mavrogordato reports that possibly silica dust exerts preservative action upon the cells which take it up, that is not exerted by inert dust. Dr. Gye and Dr. Kettle[5] found that colloidal silica, when injected into animals, is poisonous. Dr. Gye is of the opinion that the toxicity varies directly with the solubility of silica.[6] Dr. Collis,[7] in reviewing the subject, states that when soluble silica is introduced into the blood stream it reacts with liver cells causing fibrosis there, and also with kidney cells (by which its excretion is attempted) causing fibrosis there. In work done at the Bureau of Mines Experiment Station at Pittsburgh, suspensions of dust high in free silica, when injected into the abdominal cavity of guinea pigs, produced marked fibrosis. Dr. Haldane thinks that the most probable theory is " that dusts produce phthisis in

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proportion as they are physiologically inert." He thinks that they act by being in the way, and when enough particles are in the cells the life processes of the cells are slowed. In 1924 Dr. Gardner [8] stated the lymph stasis theory. This theory, which is very much in line with the opinion expressed by Dr. Haldane above, is as follows:

> By a study of inhalation experiments the primary lesion caused by dusts which migrate readily is established in the tracheobronchial lymph nodes. Sufficient accumulation of such dusts in these organs is followed by an obstructive fibrosis in the sinuses, which in turn leads to a stasis in the afferent lymphatic vessels. The pressure of the distended lymphatic vessels promotes an inflammatory response in the areolar tissues about them. Such changes are first observed within the sinuses of the lymph nodes, then in their immediate vicinity and gradually they extend toward the periphery of the lung. Such perilymphatic inflammation finally assumes the characteristics of scar tissue in the location of first appearance of such reaction in human pneumonokoniosis. That it is not due to the direct action of the dust may be inferred from the relatively small amount present in these locations.

Dr. Sleeswijk [9] states that certain sandstone, which contains 70–72 per cent SiO_2 and 13–20 per cent CaO, is found to be only slightly dangerous. *Absence* of lime according to him is more important than *presence* of silica.

With the object of answering the question whether colloidal solution of SiO_2 is really a "cell poison" as indicated by experimental data of Gye and Kettle, Scheinin [9a] made experiments on the growth of tissue culture, according to Carrel, in the presence of a colloidal solution of SiO_2. He found that such a solution exerts no retarding action on the growth of tissue culture; an emulsion of tubercle bacilli added to a nutrient liquid stops growth and also possibly may cause death. In the presence of SiO_2 and tubercle bacilli emulsion, however, the tissue grows, although less intensively. The author draws the conclusion that colloidal solution of silica cannot be said to be a "cell poison" in all cases.

Although more investigation is needed to determine the facts, nevertheless there is good empirical evidence that dust containing a high percentage of free silica is most dangerous; furthermore, that only the very fine particles reach the lung tissue and remain there. The particles found by Dr. Watkins-Pitchford and Dr. Moir [10] in the lungs of miners on the Rand were mostly less than 5 microns (1 micron = 1/25,000 of an inch) long; only 1 particle in 2,000 was over 8 microns, and only 1 in 1,000,000 was as much as 14 microns long. When it is remembered that the cells, which take up the particles of dust usually measure about 10 microns in diameter larger particles evidently cannot be ingested.

REACTION OF THE LUNGS TO DUST PARTICLES

Much of the dust breathed, especially the larger particles, is deposited in the upper air passages of the respiratory system. Dr. Gardner and Dr. Mavrogordato have published the results of the findings after exposure of guinea pigs to dust for a period of time. Dr. Gardner [11] found that after exposure of animals to Barre granite dust (about 69 per cent total silica) no macroscopic lesions could be detected until about the seventh month. If at that time the unfixed lung tissues were carefully examined immediately after opening the thorax, a delicate green-brown tracery of dust deposit could be detected on the subpleural surface along the antero-inferior borders of the upper lobes. A few smaller similar deposits occur on the vertebral borders of the lower lobes. This coloration quickly disappears on exposure to the air, probably because of coagulation changes in the tissues which render them opaque. Zenker fixation, of course, obscures this pigmentation. Dr. Gardner also states:

> . . . microscopic lesions are of more interest; but to appreciate their significance it is necessary to compare them with control animals, one series made to inhale dust alone and another tubercle bacilli alone.

These lesions are therefore summarized under the following heads:

1. Pure dust changes. After about 3 weeks' exposure small amounts of dust may be found, enclosed in mononuclear intra-alveolar cells, which often show mitotic figures. These cells are scattered everywhere in the alveoli from the pleura to the hilum. A very small amount of dust is caught in ciliated epithelium of the trachea and bronchi. At about 2 months some of these intraälveolar dust cells have begun to mobilize and have formed considerable collections, often so closely packed as to stimulate giant cells. These cell masses lie in the alveoli along the course of the ductuli alveolares and about and within the small lymphoid collections occurring in the periphery of the lung. Dust has already passed through the lung and lodged in small amounts in the tracheobronchial lymph nodes.

From 3 to 7 months the same process continues with a steady increase in the amount of dust deposit. The invasion of lymphoid tissue of the lung is more extensive and the larger nodules located at the bifurcation of the bronchioles and bronchi become involved. No dust has even been found in the liver or spleen. Occasional small deposits occur in the intestinal content but none has been seen in the mesenteric lymph nodes.

If the animal be set aside after dust exposure the lung makes rapid and effective efforts to rid itself of the irritant. The clearing process has been observed only up to 3 months in animals dusted for 7 months previously; at that time practically all the dust is collected within large aggregations of round or oval mononuclear cells which lie in the immediate vicinity of much enlarged lymph nodules. Heavy deposits occur within such nodules and within the tracheobronchial lymph nodes. Some dust still remains within the alveoli along the ductili alveolares.

Dr. Mavrogordato [4] states that when any dust gets into the lungs a large number of cells ("dust cells") are produced which take up the particles of dust. Many of the dust laden cells escape into the air passages and are coughed up and expectorated. Those which remain in the lungs become fixed and may be dangerous. The life of "dust cells" is normally brief. They may be carried off by the lymphatics or may die and be digested or dissolved by the body fluids and leave any dust, previously ingested, on the adjacent tissues. When coal dust is breathed and ingested by "dust cells," after a few weeks the dust particles can be found outside these cells on the outer surface of the blood vessels of the lungs at points where the cells have died and been digested or dissolved. Much of this dust can and does escape into the air passages to be coughed up. Doctor Mavrogordato concludes that "it is the dust which cannot escape from the tissues which is a source of danger and as long as elimination follows fairly closely upon the heels of ingestion not much harm is done. Coal seems to set up a sort of aseptic 'catarrh' in which there is a steady exodus of particles from the lungs."

When dust of free silica is breathed, the particles ingested by the "dust cells," unlike coal dust, remain within the cells. The cells become clumped together to form a mass similar to the masses of cells (tubercle) found in tuberculosis. These masses of cells, pseudo (false) tubercles, are first found near the surface of the lungs. At first they are separate, later they join together, become confluent, and assist in causing a uniform thickening of the pleura. As stated above, the cells containing silica particles do not die and are not digested or dissolved by the body fluids as is the case with those ingesting coal dust. When "dust cells" reach the lymphatics, they are not all carried off but accumulate and block the lymphatics. The cells gradually merge into fibrous tissue. The blood vessels may be surrounded by the fibrous tissue but may remain open or become plugged with the cells and finally filled with fibrous tissue. The earliest changes due to breathing silica dust in sufficient quantities are:

1. The accumulation of "dust cells" in masses or pseudo tubercles immediately under the pleura

2. The formation of free pseudo tubercles

3. The blockage of the lymphatics

In well marked cases of simple silicosis, fibrosis has taken place in the pseudo tubercles and in the blocked lymphatics and blood vessels of the lungs together with a thickening of the pleura.

LABORATORY STUDIES

In the animal studies the various investigators have tried to determine the effect of many kinds of dust. Gardner in addition to the granite dust mentioned above exposed guinea pigs to marble dust and another group to carborundum. He concluded that under the conditions of the experiment the greater portion of marble dust is soluble in the lung tissues; that the inhalation of this dust during the progress of a preëxisting tuberculosis will be followed by the calcification of a certain number of the pulmonary and tracheobronchial lymph node tubercles; that the insoluble silicious matter (from 1 to 1.9 per cent) found in the dust will produce a moderate degree of silicosis after prolonged exposure; that this silicosis will in turn render the pulmonary tissues in some unexplained manner more susceptible to infection with the tubercle bacillus; and that the tubercles produced by the low virulent R1 strain of bacilli will, as a result of this silicosis, pursue a chronic course manifesting a definite delay in the resolution process.[12] When carborundum dust was inhaled, the reaction of normal lung, as stated earlier, was surprisingly insignificant.[1] A true fibrosis in the parenchyma of the lung has never been observed. In the lymph nodes, on the other hand, a definite fibrosis was frequently encountered. In the lung in which carborundum inhalation is continued during the course of development of an inhalation tuberculosis *extensive fibrosis is common*. The most remarkable result in this experiment has been the alteration in the course of the tuberculous process induced by the inhalation of this low virulent tubercle bacillus; from a self-limited process, which usually heals by resolution, it has been transformed into a progressive tuberculous bronchopneumonia.

Mavrogordato[4] reported that dust from hard rock, containing no free silica but entirely of fine spicular hard minerals in which 89 per cent was estimated as feldspar and the rest pyroxene and other dense minerals, when breathed by guinea pigs remained within the cells. The dust particles seem to have exerted some protective influence over the cells containing them, preventing the death and autolysis of the cells.

FELDSPAR, CHINA CLAY, GROUND PITCHER

Extensive experiments have been carried out by H. M. Carleton at the University of Oxford on feldspar, china clay, ground pitcher such as is employed in potteries, and pure amorphous silica. Carleton states[13] that from experimental evidence feldspar, china clay, and ground pitcher would prove very harmful if inhaled by human beings. However, he says that it is very difficult to reconcile these findings as, although shale contains 50 to 55 per cent silica (35.2 per cent free silica), human and experimental evidence is in unanimous agreement that shale can be inhaled in large quantities without harm.

In order to determine the suitability of different kinds of dust for rock dusting in mines, in addition to chemical and petrographical examination of dust, studies are being carried out on animals at the Pittsburgh experiment station. Animals are exposed in chambers to a known concentration of dust. The dusts used as basic types are coal dust, as the type to which men will necessarily be exposed, and quartz dust, as the most dangerous type of dust that might be added for the prevention of explosions. Limestone dust, shale, and kaolin dust (practically a pure silicate) are also being tested. From these studies, it is found that the limestone dust has no more effect than coal dust in the production of fibrous tissue but the silicate dust has an effect similar to that caused by quartz dust.

Table I gives the average death rates per 100,000 in certain states for silicosis, tuberculosis, influenza, pneumonia, and other respiratory diseases as well as for all diseases among coal miners, metal

TABLE I

AVERAGE DEATH RATE PER 100,000 OF MINERS AND OF THE GENERAL POPULATION FOR THE 4-YEAR PERIOD 1917–1920, AND OF GRANITE CUTTERS OF THE UNITED STATES AND CANADA FOR THE 4-YEAR PERIOD 1915–1918 [1]

Diseases	California			Colorado			Illinois[2]		
	Coal Miners	Metal Miners	General Population	Coal Miners	Metal Miners	General Population	Coal Miners	Metal Miners	General Population[3]
Silicosis	.....	34.66	.....	66.17	609.32	.....	0.55[4]	.....	.....
Tuberculosis	.....	664.45	155.7	76.12	154.40	205.60	109.21	.....	104.30
Influenza	.....	162.56	124.6	110.97	644.72	177.85	128.02	.....	141.96
Pneumonia	.....	521.70	133.5	420.40	2182.09	184.87	151.12	.....	162.66
Other Resp. Dis.	.....	127.86	.....	39.19	137.97	.....	33.51	.....	.....
All Diseases	.....	3564.47	1457.50	2045.00	6167.25	1715.00	1300.41	.....	1360.00

Diseases	Indiana			Missouri			Nevada[5]			United States and Canada Granite Cutters
	Coal Miners	Metal Miners	General Population	Coal Miners	Metal Miners	General Population	Coal Miners	Metal Miners	General Population	
Silicosis	.....	.....	.....	.....	.....	.....	.....	95.22	.....	.....
Tuberculosis	88.53	.....	105.75	91.09	1946.70[6]	117.3	.....	298.06	.....	1044.37
Influenza	173.42	.....	100.20	214.98	602.24	102.5	.....	149.23	.....	.....
Pneumonia	96.25	.....	144.72	92.60	338.10	178.8	.....	656.98	.....	.....
Other Resp. Dis.	94.24	.....	.....	16.49	39.41	.....	.....	51.91	.....	.....
All Diseases	1372.78	.....	1397.50	971.00	4317.04	1342.5	.....	2635.62	847.85	.....

[1] Exclusive of the last three months of 1918.
[2] Data for Illinois are for 1916–1919.
[3] No figures are given for 1917 by Census Bureau as Illinois was not in registration area at that time.
[4] Anthracosis.
[5] Nevada not in the registration area and the population has been estimated.
[6] The high death rate per 100,000 for metal miners in Missouri may be fallacious. Many of the miners still residing in Jasper County (where the rate was much higher than in the eastern part of the state) are using the electric cars to get to their work in new developments in Oklahoma, consequently if any of them die, the record of death gives their place of residence and not their place of work.
[7] These figures are taken from Bulletin No. 293 of the Bureau of Labor Statistics, Department of Labor, by Frederick L. Hoffman, 1922.

miners, and the general population for a 4-year period. The rate for tuberculosis among granite workers of the United States and Canada is also given for comparison, as this occupation is known to predispose to this disease. This table shows that the death rate due to silicosis and tuberculosis among metal miners of the states given is much higher than the death rates due to these diseases among coal miners or among the general population. The rates for these two diseases can be combined, as they are usually associated in this industry.

While Table I refers to mining, silicosis occurs in many other industries, as the abrasive industry, the pottery, tool grinding, sand blasting, and brick making industries. That no nationality is exempt and that all races are susceptible is shown by the wide distribution of silicosis. Although the incidence is higher among the younger miners in districts where the percentage of free silica is high and among older miners where the percentage of silica is low, age in itself probably is no great factor.

Previous occupation of the men may have a definite influence in predisposing to silicosis, if they have been exposed to dust or to other respiratory irritants.

Men who have worked in certain coal mines for several years seem to be less susceptible to silicosis than the average man. According to some investigators, animal experiments indicate that coal dust has this effect. Three groups of animals were exposed for a definite time as follows[4]: Group I to free silica dust, Group II to a mixture of coal dust and silica dust, and Group III first to coal dust and then to silica dust. They were examined several months after exposure, and Groups I and II had more silica remaining in the lungs than Group III, although silica dust could be demonstrated in all groups.

Men who have or have had respiratory diseases, especially tuberculosis, are apparently more readily affected by silica dust.

In the gold mines of South Africa where the conditions are good, the average time of exposure of men before simple

silicosis can be diagnosed is seven and one-half years; the shortest period of exposure is reported to be two and one-half years.[14] In other mining districts the length of exposure to silica dust necessary to cause silicosis varies with the condition of exposure from a few months to several years.

Dr. Watkins-Pitchford has recently emphasized [15] the importance of tuberculosis and the importance of detecting and isolating tuberculosis bacillus carriers from the mine at the earliest possible time in an address to the officials of the Dust Sampling Department of the Chamber of Mines of South Africa.

STAGES OF SILICOSIS

Silicosis has been arbitrarily divided into different stages in various countries. In the United States the stages are called first, second, and third; in South Africa they are defined by law as anteprimary, primary, and secondary. The earliest stage means that definite physical signs of damage to the lungs have been found, and that such damage has occurred during and in consequence of exposure to dust. The second stage means that definite and specific physical signs of silicosis are or have been present and that the capacity for work has been seriously and permanently impaired by the disease.

The symptoms of uncomplicated early silicosis are few and often indefinite. Slight shortness of breath on exertion, often with recurrent colds, is the most constant symptom. The general health is good. The patient may apparently be quite well and his working capacity not noticeably impaired. He may have a little less ability to expand his chest than formerly and the elasticity of the chest may be slightly impaired. This stage may exist for a long time.

As the disease progresses the symptoms increase in severity. The second stage is indicated by a definite shortness of breath on exertion and perhaps flitting pains which attract the attention of the patient; also often by a morning cough with little or no expectoration and by more frequent recurrence of colds. Even then the patient's health may not be noticeably affected. He may not lose flesh and may appear quite robust. But his "wind is bad," he cannot work as well as formerly, and his chest expansion is noticeably decreased. In well-developed cases of this stage the chest is held in a state of partial inspiration.

In the advanced, or third stage, the shortness of breath is marked and even distressing; the patient coughs more often; the expectoration is in most cases slight but may be more copious. The patient becomes unable to work, he loses flesh, his expansion is greatly decreased even with a forced inspiration, his pulse rate is increased, and his heart may become dilated.

The cardinal symptom, it will be noticed, is shortness of breath, especially on exertion. The cardinal sign is diminished expansion of the chest. These symptoms are slight in the early stages. The cough is that of irritation and may be brought on by having the man take a deep breath; it cannot, however, be considered as a cardinal symptom. Recurrent colds and pains in the chest are also important symptoms. The symptoms characteristic of tuberculosis—loss of appetite and strength, rise in body temperature, night sweats, and hemoptysis (spitting of blood)—are not found unless infection is present. Other symptoms and signs, especially the X-ray findings, are of great aid in diagnosing silicosis.

X-RAY EXAMINATIONS

The X-ray of a normal chest shows the heart shadow about the center of the picture, merging with the shadow of the diaphragm below and the big blood vessels and spinal column above. On each side of these are parallel shadows cast by the ribs. Between the shadows the picture is clear except for the shadows cast by the lung structures. The hilum, or root,

of the lung is composed of the large blood vessels and bronchi; the shadows cast by these are on either side of the upper part of the heart shadow and are irregular in shape, with the shadows of the larger blood vessels radiating from them.

Dr. H. K. Pancoast [16] and Dr. S. B. Childs [17] in this country and Dr. W. Steuart [18] of South Africa have had extensive experience in interpreting X-ray pictures of the chest of cases of silicosis. The writings of these men have been carefully consulted and, although they describe the various stages in somewhat different language, the findings of all are about as follows:

The first change noted in the X-ray of a man who is developing silicosis is enlarged hilum shadows; that is, the shadows become denser and more extensive, gradually involving the smaller bronchi and in time forming a linear network. In simple silicosis these changes are almost symmetrical throughout both lungs, except that the shadows are usually more marked toward the right base. All agree that these findings may be due to other causes and a definite diagnosis of silicosis in an individual case cannot be made at this time on signs on the X-ray negative without clinical findings. For a group investigation, however, as that made in Broken Hill,[19] diagnosis of pneumoconiosis in men who complained of no symptoms of ill health of any kind was made on the X-ray findings alone.

In the second stage, the hilum or root structure shadows are much denser and larger, the finer shadows found in early silicosis have increased in number and density, are less regular and look beaded. Sometimes the effect is described as a generalized mottling.

In the third stage the entire area of both lungs is covered by many discrete well defined rounded shadows.

NOTE: Part II will be published in the April JOURNAL.

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LABORATORY ASPECTS OF COLLEGE COURSES IN HYGIENE*

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THE TIME HAS soon to arrive when every college will recognize that the conferring of a degree on any individual must mean that that individual shall be in the best possible health, and shall know how to preserve that health not only for himself but also for family and community.

Any attempt to discuss hygiene teaching or health education in colleges must deal largely in the theoretical. This is especially true of the laboratory aspects of this problem. Emphasis must be laid on *possibilities*. *Precedents* are few and far between.

In passing, we must acknowledge that what seems practicable to-day may well become less useful as time goes on. College practices will undoubtedly be influenced by methods in elementary and secondary schools, for in the work in the lower schools must lie the foundation for the college courses.

Health education in elementary schools is just emerging from the experimental stage; real health education in secondary schools is rare. Therefore, we have little or no sound foundation for courses of college grade. For the time being, the college, if it accept responsibility at all, must supply material which should have been given in lower educational institutions.

Certain principles in health education in elementary and secondary schools may well carry over into colleges, though to what extent is as yet undetermined. How far shall we carry into colleges the principles—"Health through the entire curriculum," "Every subject a means of teaching health," "Positive health"? Difficulties arise at once, such as: (1) the extreme specialization of the college instructors (a difficulty met even in high schools); and, (2) the demands of professional schools on college curricula for students who plan later to seek professional degrees, just as preparatory schools have difficulties now because of college entrance requirements.

Other drawbacks are these: (3) The college educator considers health at best a means to an end, despite the claims of the health worker that health is an end *per se*. The result is a compromise course in hygiene. (4) The time allowed in colleges for hygiene or health education is extremely limited. (5) Students entering college have widely varied degrees of health knowledge, attitudes, and habits by reason of previous instruction or lack of it. All these difficulties influence importantly the choice of teaching material and method of instruction in colleges.

THE THREE L'S

What possibilities for health education are there in colleges? I like to call them the THREE L's, that is, *lecture*, *library*, *laboratory*.

The *lecture* course includes lectures, recitations, even snappy discussions if the group is small. Possibly the more energetic members of the class may be asked to bring in suitable reports. The lecture

* This is the third of the series of articles on "Teaching Health in Colleges," delivered at the Fifty-fifth Annual Meeting of the American Public Health Association at Buffalo, N. Y., October 13, 1926. Other papers by Dr. Sundwall and Dr. Storey appeared in the January and February issues.

course is the easiest to organize, covering the necessary ground somehow in the time allowed. Lecture courses are successful largely on the selling power and personality of the lecturer. Unfortunately, such courses, especially if the lecturer does most of the talking, too often result in lack of interest, half understood information, and at times absolutely wrong impressions which turn up later during illnesses and impose the added burden of a mental hygiene problem. Fortunately, the old-fashioned and overemphasized sex lectures are less fashionable and sex instruction is superseded by that better subject—social hygiene.

The *library* has remarkable possibilities for supplementing any health course. Good hygiene books, covering personal and community hygiene, are available for all mental levels and may be used liberally. The sound health magazines, if they were shown that such a course would be profitable, could well cater to the college group somewhat, and would probably be glad to develop the unrealized possibilities in this field. Books and magazines must sell themselves to the student through the ability of authors and editors to arouse interest.

The *laboratory* may be used as part of a lecture and library course, or it may exist *per se*. The possibilities of the laboratory are broader than might first be suspected. The popular project method of education is really a laboratory plan. Therefore, our laboratory method of teaching hygiene is in keeping with the most approved and successful educational methods.

Physical education, a laboratory subject, may be dismissed by stating that the approved plan is universal participation in the program by the physically fit, at least. Indoor apparatus work, sooner or later, is going to give way to outdoor sport, except for candidates for the "gym team." Furthermore, I suspect that the student who prefers dancing, golf, tennis, handball and similar activities and games, carries into life more than the student who indulges in major sports—the physical aspects of which cannot be carried into later life, granting all that may be said for character development.

LABORATORY METHOD IN HYGIENE TEACHING

Among the possibilities for teaching hygiene by the laboratory method are: (1) plans built around the health office; (2) plans built around the health instructor personally; (3) plans for very definite work of the laboratory or experimental type.

Let us consider first plans built around the health office.

The *annual health examination* is a basic need for every college health program. In this examination must be considered the mental, social and other healths of the student, just as much as his physical health. The physician in educational institutions must take advantage of all information afforded by the psychologists and the social groups. Unless such a physician is willing and able to acquaint himself or herself with the field of education, at least to the extent of appreciation and interpretation, he or she is misplaced.

Many health examinations fall down because of impersonal mass production methods. A man's relation to his physician is a peculiar one and this must be recognized, if best results are attained. The value of the health examination *per se* is nil. It is justifiable because, (1) of its effect on the life of the individual through encouraging and promoting correction of defects of physique and living; and (2) it should develop a desirable habit, viz., repetition of this examination yearly, after graduation from college.

In our experience at Teachers College, Columbia University—and probably the same is true elsewhere—we have found a very definite interest of students in something concrete, a score or estimate of health, and for this reason a form known as the "Personal Health Standard and Scale" was devised by the college physician, Thomas D. Wood, M.D. The

student scores his or her own habits and knowledge. The examiner scores the health examination and makes up the total rating. In some institutions this or a similar form is filled out by the student as part of the hygiene course, and this practice properly performed should make the student realize the need and value of the health examination to the student and to the educational institution; and encourage the student to seek a thorough health examination if the college has not provided it.

The self service form and plan has proved exceedingly popular with our students, in fact, so much so that they have carried the idea to other institutions and it has been necessary to make the form generally available through the Teachers College Bureau of Publications.

Space is provided for consecutive examinations, so that the student has the possibility of improving the score at a later time. There is the additional advantage that this form is a means of helping the student keep tabs on his or her health between examinations, not only through the habits and knowledge which are emphasized but because on this form is provided space for regular weighing (monthly). Height-weight-age tables are printed on the back sheet below the weight record so that the student may compare the individual record with a norm.

INTELLIGENT CHECKING OF WEIGHT AND HEIGHT

There is a distinct danger in giving a student false values through unintelligent anthropometry. Weighing and measuring height are valuable, yet the student must understand that a considerable individual variation from the table weight is permissible. We advocate monthly weighing for the apparently healthy, and weekly weighing for others. In the healthy, emphasis is placed on maintaining suitable weight; in the underweight or overweight, in general, emphasis is placed on the progress made in attaining the normal with reasonable, sensible rapidity. Reducing or gaining weight should be undertaken only under medical supervision.

While the value of weighing, intelligently interpreted, is admitted universally, the same is not true for other anthropometry. Such measures as spirometry—taking chest girth—and dynamometry are interesting because they are concrete and because progress can often be shown in the measurements taken. But as estimates of health these combinations and others are uncertain and misleading. The so-called "measure of a man" has no real value to the student and I suspect that certain physical educators are deceived too often by such easily acquired data.

Place a scale outside your office door; let the students keep regular track of their weight; and forget the rest of anthropometry till it is on a more practicable basis and health education in colleges is given more time than now.

Many institutions provide definite health service for their students and this is justifiable educationally because: (1) The student is encouraged and taught to seek medical advice early and the advantages of abbreviating the consequent illness are proved to him. He pays a stated fee for such service whether he uses it or not, so there is every inducement to take advantage of the privilege. (2) Attendance is improved because illness and days absent are shortened, and the classroom efficiency of the student thus increased. (3) Such service supplements the health examination in many ways, perhaps best by helping to direct the efforts of the student toward improvement of his health status or habits of living.

The second aspect of laboratory teaching is the work built around the health instructor himself or herself. This relationship between instructor and student begins in the classroom, provided recitation methods are used and the class is grouped in small sections. One of our recent graduates, dealing with college freshmen, calls them by their first names, is in turn called his nickname by them,

and a very informal atmosphere prevails. Because he sees the health teacher in a different light from the average instructor (who is a disciplinarian by necessity), the student soon carries to him privately his troubles, physical, mental, and otherwise. And so the health instructor, whether physician or teacher, soon finds his office a laboratory for individual guidance in health, usually in personal hygiene.

But many will feel that what I have outlined as yet is not strictly to be termed laboratory. Let us then consider what may be termed "pure laboratory" work.

PURE LABORATORY WORK DEFINED

"Pure laboratory" work may be divided into surveys, observation trips, and class exercises at which basic experiments are performed by the students, and practical applications made.

The value of student surveys is doubted by many. Why should a student spend many hours scoring restaurants, dairies, water supplies, sewage disposal plants, etc., when he may read about them in his texts? Here we are confronted with the familiar differences between the theoretical knowledge and the practical application of it. Many students are possible future members of boards of health in the smaller centers; very few students will not be asked at some time to vote on some public health problem. Few voters to-day are able to cast an intelligent ballot on any public health matter. How could they? Remember, the practical work in the survey encourages the student to peruse the text from a new point of view as a guide to his faltering step in public health practice, rather than so many pages of assigned reading. He becomes an amateur health officer and as such endeavors to fit himself for his duty, in this case of survey. Rosenau has always made a comprehensive health survey of some city or town a requirement in his course in hygiene. Even in a splendidly organized and taught course such as his, the survey leaves a more lasting impression than almost anything in the instruction. An appeal is made to the creative instinct of the student. The idea educationally is a good one. It is a project, if you like. The interest factor is strong in the end, if not in the beginning, when possibly the student may look on a survey as a chore.

Observation trips seem to vary in popularity. Students place a high value on their leisure time and such trips can only be made then. Many extracurricular college activities occur during these leisure hours. Then, too, students in general seem to prefer to have the mountain brought to them rather than adopting Mohammed's plan and going to the mountain. Free train rides and refreshments do not seem to increase attendance at these excursions, even among professional students. And yet there are so many places to visit—cold storage plants, dairies and pasteurizing plants, water supplies and water purification plants, sewage disposal plants. Great crowds visit the aeration plant at Kensico dam near New York City, but perhaps they are led by curiosity and a sense of the beautiful as much as by any interest in science. Observation trips could be made much more attractive by previous explanatory lecture or reading, and by simple, non-technical demonstrations and explanations at the visit to the plant. Too often the accompanying talk, usually given amid a bedlam of machinery, is uninspired, hurried, highly technical, and so interest wanes. Students compare notes on such expeditions and soon arrive at what may be considered a group opinion, spelling success or failure for other projected expeditions. And it should be admitted that it is often difficult and time-consuming for the instructor to arrange these trips.

Now let us consider work performed in the laboratory itself. This takes a large number of forms, at which we can only hint. It is much more difficult to provide courses for mixed groups or for boys than for girls. This is not due to any social problem but because the girl has many interests and activities which lend themselves to laboratory work.

ESSENTIALS OF GENERAL LABORATORY PROGRAM

Home economics and nutrition offer splendid laboratory possibilities. Demonstration houses have baths, dish-washing equipment, modern devices for good housekeeping which is essentially good home hygiene. The girls enjoy this type of laboratory work; in fact the influence of the home economics and nutrition departments is so strong in the field of health that in certain places the health program is directed by them. Then too, every girl ought to know how to keep house healthfully and every boy also, for emergency purposes. Teach him cookery as camp cooking and he will cry for more. Again, for girls, work in child hygiene and home nursing offers great possibilities. Just as we have Mothercraft and Little Mother work in the lower schools, and similar courses in junior high schools and continuation schools, operating most successfully, so we find a similar movement in certain colleges for women. I am told that interest is high and such material is of tremendous practical value to these students.

First aid instruction should always be given. I doubt if any student, male or female, ought to be allowed to graduate from college without a Red Cross first aid certificate or some other certificate of equal rank. Under the present tendencies, accident prevention as well as the actual technic of first aid administration should be taught.

LEARNING HOW TO DETECT DISEASES

Studies of the human being as such are interesting and profitable. Most individuals will be parents or have some responsibility in connection with children. Why not teach them something of the simple methods of examination for signs of health disorders which we employ in schools in the process of screening. If parents only knew how to look for and detect signs of children's diseases, or adult diseases for that matter, earlier, one of the greatest difficulties of physicians would be removed, for cases could be seen early when expectation of good results from treatment are best. Students in such classes could use each other for examination specimens, or in rare cases subjects might be provided for them to examine. Diagnosis is not taught. The individual is merely taught to go through certain examination procedures to determine whether or not certain signs of health disorders are present. If these are present, the services of a physician are to be sought. It is true that some experienced parents have attained and use such knowledge already. The laity will gladly diagnose many cases before a physician is willing to do so. Why not give the college student the proper point of view and the proper technic for examining for health disorders? It is far more useful than asking him to learn the 10 causes of constipation, which he forgets the moment the examination is over.

In one of my own professional courses, the students actually assume responsibility for monthly estimate of the nutritional status, including weighing and measuring, of the pupils of an elementary school. They also examine school children frequently for signs of health disorders. Here is another laboratory project colleges can use.

MAKING THE HYGIENE COURSE PRACTICAL

Then there are actual experiments to be made in the laboratory from which the basic principles of hygiene may be derived. Laboratory and science courses in general offer two interesting possibilities: (1) the building of a hygiene course in which are used to full advantage the principles learned by students from other courses in the sciences; (2) the building of a hygiene course in which will be combined the practical aspects of courses in physics, chemistry, biology, perhaps psychology and others, with a direct bearing on the application of simple experiments and principles to the field of hygiene or health education. After all, how much do we use in practical life of the curricular

material in the sciences? In this second type, of course, lies definite possibilities, especially in these matter-of-fact days.

For ten years the outstanding course of the latter type, surprising in its ingenious methods, has been given by Gregg at Nebraska Wesleyan University, where high school pupils perform factinating experiments, as do professional students. Interest is aroused and held throughout the course. The total expense for apparatus is negligible, the simplest materials being used. The time is that required in any standard course. Until one has seen Gregg's germ gardens, bacteriology never seemed so simple. From the experiments the students draw certain conclusions and on the basis of these conclusions and wisely selected text material, they build up an adequate health knowledge. Without sound health knowledge for a background, health habits may be led astray because of new situations unanticipated in previous instruction. But intelligent habits and attitudes, based on sound knowledge, will last and prove practicable.

HEALTH PUBLICITY IMPORTANT

Health publicity has a legitimate place in college health work. The brain befuddling, sex-minded health evangelist, most fortunately, is going the way of the other aborigines in the world of health. To-day it may be stated safely that the less ballyhoo and the more sound, sensible, unostentatious work done for health in any type of institution, the more lasting the result. Barnard College has perhaps the best plan for health publicity, which is essentially a demonstration of health results being attained at Barnard and how they are reached. Perhaps we can include demonstrations of this type in our laboratory work, just as we may include exhibitions of health material, such as posters, garments, furniture, literature, and what not. The late Stella Boothe with her Museum of Hygiene in New York City, did more for health than most of us ever will do. Perhaps, when colleges give adequate attention to health, it will be possible to have available more such museums of health. They are highly appreciated by the student, judging from Miss Boothe's experience, and are of practical value.

In this paper I have tried to show that of the three L's—lecture, library, and laboratory—the laboratory is sound educationally, has a wide range of possibilities, and may produce results of more real educational value than the other types of instruction in health. If hygiene is taught in colleges at all, it ought to be handled adequately. That means well-planned courses, trained instructors, and suitable places to give instruction. From this it is but a step to say that we can use the time at present available, at least partly, in laboratory practices, since these seem to have the power to hold interest better than other types of instruction and are in general of greater practical value.

ROBERT WILSON ARCHIBALD

Dr. R. W. Archibald, of the Division of Sanitation, Minnesota Department of Health, died February 14 at Hibbing, Minnesota, from injuries received in an automobile accident.

Dr. Archibald was born at Hinsdale, New Hampshire, October 11, 1889. He attended Dartmouth College in 1908, and was graduated from the University of Pennsylvania in 1911. During the World War, he served as lieutenant in the Sanitary Corps, U. S. A.

He was dairy inspector for the city of Winona, Minnesota, from 1913 until 1917, when he entered the service of the Minnesota Department of Health and continued there until the time of his death.

Dr. Archibald was recognized as one of the outstanding men in milk sanitation work in the country, and was the author of a number of scientific publications on milk problems.

THE TREATMENT OF MILK BY AN ELECTRICAL METHOD

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THE papers by Professor Prescott and Mr. Kelly are the fifth and sixth in the series on Milk presented at the Fifty-fifth Annual Meeting of the A.P.H.A. at Buffalo in October, 1926.

Other papers to be published in the JOURNAL are:

The Effect of Different Temperatures for Pasteurization Upon the Entire Flora of Milk
M. J. Prucha

Report of the Committee on Milk Supply

Discussion of all the Milk papers published

FOR AT LEAST twenty years attempts have been made to utilize electricity in the treatment of milk for the purpose of destroying bacteria and thus improving both the keeping quality and the sanitary condition of this important food product, but for a long time little progress was made. It was assumed that the use of the electric current in the improvement of milk supplies and for the killing of filth and pathogenic bacteria was entirely impracticable, and that the process of destroying organisms of infectious disease must necessarily be dependent upon the use of steam as a source of heat.

DEVELOPMENT OF A PROCESS

About 1914 the Medical Research Committee of Great Britain, working in the interests of the nation's health, arranged to give some assistance to investigations being carried on in Liverpool by Professor Beattie, Professor of Bacteriology at the University of Liverpool, on the destruction of bacteria in milk by an electrical method. In the development of his process Professor Beattie had the advice of the distinguished physicist, Sir Oliver Lodge, who aided in the study of current action on its technical side. The outcome of a number of years of experimental work was a process by which milk, subjected to the action of the electric current in the apparatus developed, is thereby heated quickly, uniformly and completely to temperatures which can be accurately controlled.

Evidence was adduced by the English experiments at Liverpool and later at Birmingham that brief treatments, amounting to only a fraction of a minute, were effective in destroying pathogenic bacteria. There seemed to be some evidence for the opinion that this destruction of the microörganisms was not solely the result of this short period of heating, but that there was also an electrocutionary effect or destruction due to electric action itself. It was demonstrated that milk could be freed from living tubercle bacilli, typhoid bacilli, and colon bacilli by this process, without noticeable change in the appearance or taste

of the milk and without greatly exceeding the temperatures actually employed by Pasteur in his classic experiments on the treatment of liquids to prevent spoilage by invading microörganisms.

The introduction of the process into the United States was followed by careful study resulting in changes of design and operation, and several technical improvements resulting in simplified operation and automatic control were developed. A number of installations of this process by milk purveying companies have now been made.

OBSERVATIONS IN A BOSTON PLANT

Assisted by an able student, E. M. Holmes, I have had an opportunity to follow the general routine performance of one of these installations. This paper presents a brief statement of some of the results obtained in this study. The plant under observation was a small plant near Boston in which approximately 3,000 quarts of milk are treated daily. The observations have covered about a year, but for the most part were made during the period from November, 1925, to June, 1926.

The treatment received by the milk is essentially as follows: The milk from the receiving tank at the plant flows by gravity to a centrifugal pump by which it is forced through the pipes of a regenerative cooler, where it is warmed to about 118° F. by exchange with the hot milk on the outside. Thence it passes through a cloth filter for the removal of dirt or foreign matter, and reaches the treating chamber where it is subjected to an alternating current of 220 volts, 60 cycles. The milk serves both as a conductor and a resistance, causing the rise in temperature. In the treating chamber, therefore, the temperature of every part of the milk is raised to a predetermined degree at which the apparatus is set to operate (generally 158–160° F. in commercial practice). From the treating chamber the hot milk passes to the regenerative cooler, where its temperature is lowered first by the heat exchange with the cold raw milk, as previously mentioned, and then by passing over pipes containing cold brine or direct expansion ammonia. We have never found the final temperature of the milk to exceed 40° F.

AUTOMATIC CONTROL OF PREDETERMINED TEMPERATURE

The predetermined temperature at which the apparatus is set to operate is accurately maintained by an automatic thermally actuated electric control which governs the rate at which the milk passes through the treating chamber. The time required for such passage in the standard commercial cell is about 12 seconds.

The studies which we have made on the operation of this process have been as follows:

1. Uniformity of treatment and accuracy of temperature control
2. Taste and appearance of the resulting product
3. Reduction in the number of bacteria
4. Reduction of the thermophilic organisms occurring in milk
5. Surviving types of organisms

Frequent observations showed that the uniformity of treatment was marked. The raw milk was received daily in well iced condition and showed an average temperature of 49° F., with naturally some variations above or below this point.

The temperature of the preheated milk as it entered the chamber, after having passed through the regenerator, was subject to slight variation, depending on the temperature of the raw milk and the rate of flow. The average temperature was approximately 118° F.

In the plant under observation a treatment temperature of 158–160° was desired, and we found as an average of all our observations that the temperature of the milk as it was delivered from the treating chamber to the top of the cooler was 158.5° F.

The milk as it flowed from the bottom of the cooler gave an average temperature of 39° F. with maximum variation of 2 degrees.

QUALITY AND APPEARANCE OF MILK UNCHANGED

The question of taste and appearance of the milk may be summed up by the statement that the milk at no time gave us a cooked taste, and the cream line was well marked, and the volume of cream appeared as in untreated milk. The keeping quality was excellent.

Obviously our greatest interest centers in the effect of this treatment on bacteria. A large number of determinations of numbers of bacteria were made, using as culture media, nutrient agar of the composition and reaction recommended by the *Standard Methods for Milk Analysis* of the Laboratory Section of the AMERICAN PUBLIC HEALTH ASSOCIATION; litmus lactose agar (bacto product), and special milk powder agar prepared by Ayers formula. As was to be expected, the Ayers milk agar gave higher counts both in the raw and the treated milk.

The studies on reduction of numbers of bacteria have shown in general a high efficiency. In our determinations we found that during the winter months the raw milk gave a count of less than 200,000 bacteria and a percentage reduction of approximately 90 per cent was obtained. In the warmer months the raw milk was received with a much higher count, running from 500,000 to 600,000 bacteria and the percentage reduction varying from 97 per cent to 98.5 per cent.

These figures are in general agreement with those we have repeatedly found on heat treatment of milks less than 24 hours old, which have been well iced, or of clean milk supplies having relatively low bacterial counts.

THERMOPHILIC ORGANISMS

Some study was given to the destruction of thermophilic organisms and determinations were made of the numbers of bacteria, both in the raw and the treated milks, which would grow at an incubation temperature of 50–55° C. Although our data on this point are insufficient to draw definite conclusions without additional evidence, our findings may have some interest. An average count of about 20,000 thermophilic organisms per c.c. was obtained in the raw milk, and about 80 per cent of these were destroyed by treatment.

Studies on some of the surviving types of bacteria gave as common survivors, 1 strain of chromogenic sarcina, 1 chromogenic micrococcus, and 3 spore-forming rod-shaped bacteria of which 2 grew readily at 50–55°. No colon bacilli were found in the samples of treated milk.

My own experiments on the effect of this treatment on Myco bacteria tuberculosis have agreed with the results of the English and other workers, and have shown that, operating under the recommended commercial conditions of 160° F., 220 volts, 60 cycles, no tubercle bacilli survive.

American Child Health Association Annual Meeting—This year's meeting of the American Child Health Association will be held in Washington, D. C., May 9–11, with headquarters at the Hotel Willard. Special consideration in the program is being given to the health of the school child and to the desirability of harmonizing the activities of governmental and non-governmental agencies dealing with child health.

CLASSIFICATION AND GRADING OF MILK

ERNEST KELLY

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THE PURPOSE of grading milk is to separate the available supply of potable milk into classes differing in superiority. Nearly all food products are graded in some way. Butter and cheese, for instance, are graded according to palatability and other factors which appeal to the consumer. Meat is classed according to the cut. These classes differ in desirability, as in the case of porterhouse steak, round steak, clod, shank, et cetera. It is all good wholesome meat, but some of the cuts are more tasty and more desirable to the consumer than others and hence command a higher price. Further steps are being taken to grade meats within the same class. It appears equally logical to separate milk into similar classes so that the consumer may select milk for particular purposes according to his desires and pocketbook.

It must be borne in mind that grading is a further refinement of inspection. Inspection by itself selects the food products that may be consumed and rejects unfit food products. Grading begins where inspection leaves off; that is, it should be used to specify certain superior qualities in a product which has already passed inspection requirements.

Many grading systems have been worked out and a number of them are now in operation. These systems have varied over a wide range; for instance, the bacterial requirements for Grade A milk range all the way from 10,000 to 200,000 per c.c. Certified milk is practically the only stable grade, rules for production being laid down by the American Association of Medical Milk Commissions. From the ethical standpoint this variation in requirements for similar grades is extremely undesirable, and the trend should be toward a similarity of requirements in the same grades. There enters into the problem, however, the practicability of the whole matter, and there is a serious question as to whether or not it is possible in the present state of the industry to enforce uniform grades universally.

ADVANTAGES AND DISADVANTAGES OF GRADING

The grading of milk supplies has several advantages. In the first place it serves as a reward to those dairymen who, by additional labor and expense, exceed the minimum requirements for sanitary milk production demanded by law. Second, such a system tends to improve conditions on the lower grade of farms because they must meet competition to hold their trade; and if there is a proper price distinction, as there should be, the lower grade dairyman has a further incentive to improve his conditions. Third, it allows the consumer to choose the particular grade of milk he wants and if he wishes to invest the money to secure a superior grade, the way is open to him.

There are some possible disadvantages of a grading system, but most of them are based on the method of enforcement rather than on the system itself. Without doubt grading involves more clerical work and probably more laboratory work, but this latter is not really a disadvantage. If grading systems are not properly enforced, they cast discredit upon the whole

system and the high class dairyman suffers by being forced to compete with low grade milk which perhaps may be classed as high grade. The consumer also finds out that some of the so-called high grade milk is not really of a superior character and so loses faith in the system.

IMPORTANT POINTS IN GRADING

It is only necessary to mention briefly that the success of a grading system depends almost entirely upon sufficient funds and personnel for proper enforcement and upon a workable ordinance which is strong enough to bring about the desired results and yet is so practicable as to be adaptable to the community.

In some places the attempt has been made to incorporate in grading requirements references to the fat content of milk. In other words, Grade A milk in some places is supposed to contain a higher percentage of butter fat than the lower grades. This seems inadvisable. Grading as a public health function should confine itself to the sanitary conditions of the milk supply. Chemical composition above the legal standards is a commercial proposition and should be taken care of as such.

Grades in milk should be few and understandable by both consumer and producer. I can not stress this point too much because I believe that the failure of some grading systems has been due to the fact that too many grades have been allowed, which has resulted in confusion to the consumer and constant change and uncertainty on the part of the producer. Furthermore, a difference in grade should mean a very real distinction in quality. It is demoralizing to both producer and consumer, for instance, to find that some Grade B milk is of better quality than some of the Grade A milk sold in the same locality.

GRADING GOVERNED BY LOCAL CONDITIONS

Reference has already been made to the desirability of enforcible grading regulations. Grading regulations should be made only after a careful study of the particular milk supply to which they are to apply. After practicable grades have been established they should be thoroughly enforced. I am inclined to believe that in the present development of dairy inspection local conditions must govern grading. It may be that in time our industry will be on such a footing as to make possible the application of universal grades, but I see no advantage and many drawbacks to attempting to carry through such a system before the time is ripe. We have so many varied conditions in the industry that universal uniformity of grades seems to be impracticable. We have the small town receiving its milk from nearby sources, and we have the large city which draws its supply from hundreds of miles. We have the village where pasteurization equipment and supervision are not present or immediately feasible, and we have the metropolis where 98 or 99 per cent of the milk is pasteurized under careful supervision not only of the health department but of the dealer.

On one point I wish to make my attitude very clear. Any grading system adopted should include only milk which is reasonably safe for any purpose. It is a bad thing for the industry, for the enforcement officials, and for the consumer to include a grade or grades of milk which are not fit for drinking purposes. Such a grade allows the production of milk which should never be allowed to enter the city. From an administrative standpoint it is impossible to control, and if it is not controlled the consumer is menaced.

While realizing the protection afforded by proper pasteurization, I am aware of the fact that in some localities it is not possible to secure pasteurization of the entire supply. For this reason it is probably more practicable in many communities to allow one grade of raw milk, which should be produced only under the most careful supervision, including the tuberculin testing of cattle, regular and careful medical inspection of all employees, and

stringent regulations regarding the bacteria count. There is probably room for two grades of pasteurized milk based on the condition of the raw milk for pasteurization and the finished product as delivered to the consumer. Outside of these three grades I see no reason for further distinctions. My sympathy is thoroughly on the side of grading milk. We have already taken important steps in this direction and I feel sure that the principle will spread as the years go on. Each forward step, however, must be made with the utmost care so that a structure will be built which will stand the test of time and not have to be torn down and remodelled at the expense of constant change and confusion in methods of producers and the minds of consumers.

Grading systems are a legitimate public health function and their development rests largely in the hands of leaders such as the members of the AMERICAN PUBLIC HEALTH ASSOCIATION. Dairying from the sanitary standpoint has been practically revolutionized within the past 20 years, and the industry as a whole is ready and willing to comply with reasonable practicable regulations. The majority of dairymen do not ask special favors and they are ready and willing to market milk which is acceptable to the health authorities of our cities; in fact, there is a strong common bond between health officials and progressive dairymen. May this feeling be further stimulated and mutual understanding and coöperation be extended.

TRACHOMA IN ILLINOIS

TRACHOMA is a very vital problem in Illinois. The southern part of the state is located directly in the trachoma belt just between Kentucky and Missouri with the physical conditions which promote the spread of the disease similar to those in these adjoining states. . . . During the year in which the Illinois Society for the Prevention of Blindness conducted its demonstration clinics in five of the counties in southern Illinois, we discovered . . . that the most faithful and thorough work of any clinic may be rendered quite ineffectual in real control of the disease unless it is faithfully followed up with continued treatment facilities. . . .

We are satisfied that the most effective work of the clinics was made such by the follow-up service of the nurses who took over the patients of the clinics and who are still working in some of the counties where the clinics were held. This year of clinical service was the result of a study extending over ten years and conducted by the staff of the Illinois Charitable Eye and Ear Infirmary, in which it was disclosed that a very impressive number of the people in the southern part of the state were traveling a distance of two hundred miles to Chicago for treatment for trachoma, in many cases in the advanced stages of the disease; furthermore, it was also disclosed that this expense and loss of time was in most cases of no effect because so many were obliged to return to their homes before they could hope to receive any permanent effect from the treatment.

The plan to take clinical service to the people in a series of traveling, diagnostic clinics, was endorsed by the State Department of Public Welfare (which bore the major expense of the year's work), the State Department of Health, the University of Illinois Medical College, the American Red Cross, and the State School for the Blind, all of which furnished members of the staff; it was later endorsed by the County Medical Society, the woman's club, and other organizations in each locality visited.

There is no question that the result of the year's work has helped toward the solution of our problems in Illinois—it has focused the attention of each locality on the real problem in its midst, on the possibility of meeting and controlling the condition. It has brought treatment facilities into the locality from the well-nigh inaccessible previous treatment center. In leaving nurses in touch with the patients and with the local physicians we did the most effective thing toward real and permanent control of the disease.—Extracts from a paper given at Annual Meeting of the National Committee for the Prevention of Blindness, December, 1926, by Marion A. Campbell, Executive Secretary, Illinois Society for Prevention of Blindness.

INTERNATIONAL ACTIVITIES IN PUBLIC HEALTH ENGINEERING

INTERNATIONAL Activities in Public Health Engineering was the subject of a session at the Fifty-fifth Annual Meeting of the American Public Health Association at Buffalo, New York, October 11, 1926.

Victor G. Heiser, M.D., introduced the subject. The paper on "Australia" read by F. F. Longley is printed in this issue.

Other contributions made at this meeting which will be published in succeeding issues of the JOURNAL include:

Latin America, *E. H. Magoon;* European Countries, *George W. Fuller;* Palestine, *Louis Cantor.*

SANITARY ENGINEERING IN FOREIGN COUNTRIES

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DURING THE past ten years I have visited some forty-odd countries and have seen something of the various sanitary engineering activities, but I doubt whether even this gives me license to address you on a subject that is so technical. My experience has been largely east of the Suez where 25 years ago very little had been done in the sanitary engineering field. It is true that men like James were doing excellent field research work in sewage disposal. I well remember seeing some of this work at Parel near Bombay in 1903. His book entitled *Oriental Drainage* attracted much attention. But when one recalls that there was not a sewer system even in big cities like Bombay, Calcutta, Colombo, Batavia, Singapore, Canton, Manila, Shanghai, or Tokio, the backwardness may well be appreciated.

It is not unlikely that America's entrance into the Orient through the acquisition of the Philippines had a stimulating effect in hastening the installation of both water and sewerage systems throughout the East. Manila had not long been occupied before a thoroughly modern sanitary sewer of the Shone type with automatic electric pumping stations was installed. At present modern sewers are found in many of the larger centers of the Orient. Unsafe drinking water was the rule. Now-a-days there are many first-class filtration systems. As yet there has been very little use made of chlorination, which has done so much for the improvement of water supplies in the United States. In the field of rubbish and garbage disposal, there is not nearly so much material to be taken care of as in the United States. As there is much greater tendency to consume practically everything that is edible, disposal methods that in other countries would yield a considerable return are usually inapplicable. In malaria control the American sanitary engineer has attracted world-wide attention. There are many inquiries as to methods used in the United States for combating malaria. Elsewhere, too, notable work has been done in this field; in Malaya, for instance,

the sanitary engineers have developed drainage and other control measures that compare favorably with those of other countries. Much ingenuity has been shown in overcoming obstacles.

During the past few years the development of sanitary engineering in Central America has been very rapid. Divisions of sanitary engineering have been created and are in actual operation in the health departments of Salvador, Honduras, Nicaragua, and Panama. Progress in chlorinating water supplies has also been rapid during the past year. This work has been popular in Central America. In spite of revolutions from time to time these installations have been largely undisturbed. In the eastern hemisphere sanitary engineering divisions have been developed in Java and Malaya, and Ceylon has authorized the establishment of a sanitary engineering division. In other countries, notably in India, much sanitary engineering is being done, but it is usually under the direct control of the departments of public works, and the health departments are not directly concerned. In brief, it is only fair to say that the science of sanitary engineering as developed by the American engineer has had considerable emulation by Central America, South America, and the countries of the East, and there is an increasing amount of interest in the possibilities of engineering assisting in the control of disease. But I will not go into further detail, as Mr. Magoon and others on the program can speak much more authoritatively.

PUBLIC HEALTH ENGINEERING IN AUSTRALIA

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THE INFLUENCE and activities of the International Health Board have extended to the furthest corners of the earth, literally as well as figuratively. The minute but ubiquitous hookworm claimed the attention of the International Health Board in Australia a half dozen years or so ago. It carried on a campaign in a three-cornered partnership with the Australian Commonwealth Government and the Queensland State Government, and it was requested also to help to blaze the way for certain other public health activities. Among these was included sanitary engineering, or public health engineering.

The interest shown by the Commonwealth Government was evidence that there was already a disposition to take up and promote a program of public health engineering. As has happened in various other cases of the kind, the initial impulse was given and interest largely sustained by a far sighted individual who has done more than has anyone else for public health in Australia. There was already some understanding of the functions of the public health engineer, the benefits to be attained from his work, and its relation to other features of a public health program.

NO SANITARY ENGINEERS INCLUDED

At the time this work was taken up, the organizations of the Commonwealth and State Health Departments in Australia did not include any sanitary or public health engineers or anyone charged with responsibility for advising, supervising and controlling this phase of public

health work along the lines which have developed in most of the states of the United States and in the Provinces of Canada. There was a medical health officer in each state, and certain legislation existed regarding the pollution of streams and the prevention of nuisances; but the active spark of public health engineering work was lacking.

In general, those charged with the administration of public health affairs did not consider engineering work a vital part of the health program, or the sciences of chemistry and biology in the light of invaluable tools and indispensable adjuncts of the engineer in his specialized work of improving physical environment upon which community health depends.

How should the Commonwealth Government proceed in this new activity? Should it pursue it in a paternal way, exercising public health functions within state jurisdiction? Or, should it leave such functions alone within state jurisdiction, and confine its activities strictly to Commonwealth jurisdiction? Or, should it aim at some more widely useful middle course?

STATE RIGHTS

The question of jurisdiction—of state rights—is fundamental, and is of no less vital importance to Australians who concern themselves with such matters than it was to Americans sixty-five years ago. It was clear at the outset, therefore, that while the Commonwealth Government might exercise direct authority in public health engineering matters within its own jurisdiction, its powers with reference to such matters in state and municipal fields could be only advisory. It can hardly be said that the Commonwealth Government wanted more than that, and with that there appeared to be opportunity for accomplishing much good.

SELLING ENGINEERING

For the task of public health engineering to attain its greatest usefulness, it must be sold, like any other commodity. After the market has been cultivated and the demand created for services of that sort, and after communities have acquired experience of the benefits, the demand persists. At the outset, one of the largest phases of the task is to create the demand; and the Australian situation was no exception to this rule.

Early in the work, a series of visits were made to the different states to establish contact with the state health authorities and certain of the municipal authorities to explain the underlying ideas regarding this phase of the public health program; to ascertain what was and what was not being done; and to try to stimulate an interest and formulate programs which would result in recognition and actual work along these lines. Other visits of this sort followed from time to time, fitting in with the program of work done.

While there were plenty of instances where state or municipal authorities failed to admit any particular need for work in public health engineering in their jurisdiction, and failed to express any appreciation for what the Commonwealth Government was trying to do, there were more instances, particularly among the municipal authorities, where they grasped the idea, saw the application of the principles to specific problems, and coöperated willingly enough.

With university authorities, the medical fraternity, practicing engineers (both in and out of Government service), and with laymen in such ways as opportunity offered, the effort was likewise made to plant the idea of service of the specially trained engineer in the field of public health work.

CONFERENCE TO PLAN FUTURE WORK

To try to crystallize the ideas of the medical health officers of the various states upon the purposes and usefulness of public health engineering work, a conference was held under the auspices of the Minister of Health for the Commonwealth, to which were invited the medical health officers of all of the states. Many features of public health work in which

engineering work and the chemical and biological sciences are involved, were subjects of discussion, and the conference resulted in a grist of resolutions which it is hoped may play an important part in the future public health program of Australia.

THE BIRTH OF "HEALTH"

There was no adequate vehicle in existence at the beginning, for the publication of matters which might help in the firm establishment of many phases of the new health program of which public health engineering was a part. A periodical called "Health" was therefore brought into existence, which continues to serve as a medium of useful publicity for the public health idea.

In addition to the efforts just outlined, it was conceived that one of the most effective ways of bringing home a lasting conviction as to the importance of the functions of the public health engineer was for this newly created Division of Public Health Engineering of the Commonwealth actually to do a goodly amount of practical work. Reverting again to the question of jurisdiction, it was clear that the Commonwealth could do such work for a state or a municipality only upon invitation; and as their officials became acquainted with the functions and aims of the Division of Public Health Engineering, plenty of such invitations were forthcoming.

SEWERAGE SYSTEMS

One of the chief sanitary needs in Australian cities and towns is water carriage systems of sewerage. The percentage of cities and towns which are provided with modern sewerage systems is very small. The writer had occasion while in Australia to get together some figures on this point, and it appeared that, classing each community of 1,000 population or larger as a city or town, about 60 per cent of such communities in Canada had water carriage systems of sewerage; in the various states of the United States, the percentage ran generally higher than 60 per cent; but in Australia, the percentage of cities and towns provided with water carriage systems was less than 10 per cent.

A number of the larger cities, notably the capital cities of the several states, are provided with sewerage systems, and among these there are a number of treatment works treating parts of the sewage of these cities. The city of Sydney has one activated sludge plant and several plants comprising sedimentation or septic tanks and filters. The cities of Melbourne and Adelaide have extensive sewage farms where the sewage is disposed of by broad irrigation. The Melbourne sewerage authorities claim that the sewage farm is a paying proposition, which claim appears to be based upon the fact that the management of the farm is in the hands of capable and experienced stockmen and a good return is obtained from large numbers of pedigreed stock raised on the farm. The City of Perth has some very efficient sprinkling filters which treat the effluent of sewage tanks. The City of Brisbane is just building a sewerage system and has an ambitious layout of activated sludge plants.

Some of these communities had problems in connection with the development or the operation of their sewerage systems, upon which the Commonwealth Health Department found it possible to give help. Numerous communities not provided with any sewerage likewise welcomed the opportunity to get the help of that department in making a start toward a suitable project for water carried sewage.

NIGHT SOIL

All of the unsewered communities, and certain parts of the sewered communities throughout the Commonwealth have the problems of handling and disposing of night soil, with all its attendant danger and offensiveness, greatly aggravated by the fact that tropical or sub-tropical conditions prevail and that the fly population

of Australia seems to be greater than of all the rest of the civilized world put together. For such a situation, the design of privies, their proper maintenance and cleanliness, and the effective control of the fly nuisance, are of the greatest importance. The pit privy was long ago barred, and the pan or pail system, with periodical removal and disposal of contents, is in universal use.

The systems for removal and disposal of night soil ranged, as might be expected, from careless and dangerous crudeness up to well protected carefulness, with the former in the majority. Cleanly removal and disposal of night soil was of greatest importance in the area of hookworm infestation along the tropical coast of Queensland. Here the campaign against the hookworm had been actively waged for many months, and it could be seen that the permanent value of the effort depended, among other things, upon absence of specific hookworm infestation in the soil; and this, in turn, depended upon the perfection of the system for night soil removal and disposal, and upon the coöperation of the community to that end.

In the hope of helping to bring this about, a unit was put in the field in that region in charge of a sanitary engineer whose duties included the effort to secure this coöperation.

As examples of the kind of work undertaken, upon invitation, by the Division of Sanitary Engineering of the Commonwealth Health Department, the following may be cited:

Investigation and preliminary report upon new sewerage projects for numerous cities and towns

Investigation and report upon the methods proposed for the treatment of the sewage of one of the capital cities

Assistance in determining causes and appropriate remedies for extensive and objectionable odors arising from main outfall sewers of two large cities, which remedies involved the removal from the sewage of fermenting solids from large quantities of abattoir wastes, and useful by-product recovery

Assistance in determining causes and appropriate remedies for objectionable odors arising periodically from the waters of a river flowing through one of the capital cities

An analysis of the causes for unsatisfactory and uneconomic operation of the system for garbage and refuse collection and disposal in one of the capital cities, and recommendations for improving this service

Investigation and recommendations upon the methods to be used for the treatment of the sewage of Canberra, the new capital city of the Commonwealth

Sanitary survey of the water supply drainage areas of one of the capital cities

Investigation and report upon the excessive fouling of a stream in the outskirts of one of the capital cities, by wool washing and tanning industries

A general formulation of policies relating to the maintenance of purity of Australian streams

Sanitary survey of the numerous small communities of an extensive irrigation area

AUSTRALIAN ENGINEER APPOINTED

As the period of coöperation of the International Health Board in this work was predetermined for a limited time only, it was necessary to provide for a continuance of this effort to promote sanitary engineering after the termination of the board's official connection. This was done by the selection of an Australian engineer who had had some experience in these lines and who had the fundamental qualifications for this kind of service, and through the good offices of the International Health Board he was given an opportunity to study public health engineering and to visit and observe various municipal engineering works for a period of about a year, in America and western Europe. He returned from his studies several months before the termination of the International Health Board's work and was thus able to familiarize himself with, and pick up the threads of that work before the board's representatives left Australia, and he has since continued in charge of the work of the Division of Public Health Engineering.

Thus through a period of two years or so there was a continuing interaction—an

increasing desire on the part of states and municipalities for the specialized services of the public health engineer; and on the part of this new specialized division of the Commonwealth Health Department, a desire to serve, and to establish more and more firmly, a recognition of the usefulness of the functions of the engineer with specialized training in public health work and in the chemical and biological sciences in their application to the public health problem.

PROGRAM OUTLINED

The soundness of the early activities and policies of such a movement can be proved only by years of experience. It will suffice for the present to say that there is no evidence of any slackening of the effort begun in 1921. On the contrary, it has recently been given a sharp forward movement as a result of a conference which marks an epoch in public health affairs in Australia. For the first time in the history of the Commonwealth, all of the ministers of health of the several states met in conference with the Minister of Health of the Commonwealth to discuss the whole policy of public health. The outcome was highly encouraging—a first class coherent program of progressive work, with all concerned committed to it, and a deep rooted spirit of go ahead—and the Division of Public Health Engineering of the Commonwealth was allotted an extensive program which will keep it moving actively for the next five years.

Award of $100,000 Offered for Conquest of Cancer—Two prizes of $50,000 each have been offered by William Lawrence Saunders of New York for discoveries of the causation, prevention and cure of cancer. The offer was made on December 15, 1926, and will stand for three years. The donor expects to renew it, if necessary.

Mr. Saunders is Chairman of the Board of Directors of the Ingersoll-Rand Company, Director of the Federal Reserve Bank of New York and President of the United Engineering Company.

The decision upon which the awards will be made is to be reached by the American Society for the Control of Cancer and approved by the American Medical Association and the American College of Surgeons.

Fellowships in Psychiatry—The National Committee for Mental Hygiene announces the availability of fellowships for training in extramural psychiatry. These fellowships are made possible by a renewal from the Rockefeller Foundation, for a second period of 3 years, of an appropriation of $40,000.

The fellowships will be given to physicians who have had previous hospital training in psychiatry and who are anxious to fit themselves for extramural work in child guidance, delinquency, education, dependence and industry. Fellowships will also be granted for the training of social workers in psychiatric social work. For detailed information address Frankwood E. Williams, M.D., National Committee for Mental Hygiene, 370 Seventh Avenue, New York City.

THE NEED FOR IMPROVED VITAL STATISTICS*

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WHY SHOULD we improve our vital statistics?

The answer to this question is to be found in an analysis of the reasons for the collection and publication of more significant data. Furthermore, such an analysis, it is hoped, may encourage the efforts and justify the appropriations necessary to bring about their supply.

Vital statistics are needed to aid in the solution of important problems. It is to the problems, then, that we must turn, not only for light upon why we need these statistics, but also for light upon the urgency of the need and upon the question as to what data are of greatest service and, therefore, of greatest urgency.

HEALTH, LONGEVITY AND POPULATION

The problems with which vital statistics are concerned consist, in general terms, of those connected with health, longevity, and population. Since the interest of society in these problems is in possibilities of control, they may be considered in two groups; the first comprising problems connected with control over disease and other causes of ill health or of shortened life; and the second, problems connected with control over the conditions that produce an optimum population. The first group of problems is by far the more familiar and includes, besides the promotion of health and control over disease, the promotion of safety —industrial safety, public safety, and safety in the home—and the elimination of violence of all kinds through maintenance of public order. The second group of problems has attracted relatively less attention, but includes the questions of emigration and immigration, of changes in the marriage rate, of divorce, of birth control, of eugenics—in short the problems of the optimum population and how to attain it.

In view of the limitations of time, the present discussion will be confined to problems of health and the prolongation of life and, in treating these, emphasis will be placed upon certain topics concerning which the need for additional statistical data is especially urgent.

The importance of controlling these problems is, of course, apparent to all, for they concern major purposes of human society. Though in the nature of an anticlimax, it may be worth while to indicate the significance, even in purely pecuniary terms, of certain of these problems. Thus, with regard to health and control over disease, it has been estimated that in the United States the realizable net gains over and above costs from adequate health measures would amount to $1,500,000,000, annually.[1] The annual preventable loss from industrial accidents may be put roughly at from four to five hundred million dollars more. Obviously, the economic gains realizable from the prevention of disease and accidents dwarf any sums that may be required for development of the necessary vital statistics.

Statistics are indispensable to any effective program of control. They are

* Read before the Vital Statistics Section of the American Public Health Association at the Fifty-fifth Annual Meeting at Buffalo, N. Y., October 11, 1926.

required at every stage. They stimulate action by showing how greatly it is needed. They show where the evils to be remedied exist, and hence where prevention is to be applied; they measure and test results. Though in the absence of intelligent measures of prevention, statistics can only arouse public opinion and interest, their importance in an effective program of control is second only to the program itself, of which they form an essential part.

SPECIFIC PROBLEMS OF PUBLIC HEALTH

Outstanding problems in the field of public health include: problems connected with the control of specific diseases; problems connected with the health of specific groups subject to common occupational or industrial risks; problems growing out of particular types of risks, such as those connected with infancy; and special problems requiring detailed research.

The first group of problems centers in the control of specific diseases. Of greatest urgency, of course, are measures for the control of epidemic diseases. Frequently this work takes on an emergency character, as when the bubonic plague invades a seaport or when, in former days, Asiatic cholera gained a foot-hold in our cities. But even the relatively less serious diseases, such as diphtheria, scarlet fever, and typhoid fever, require prompt action by health officials if they would ward against the spread of infection. The adoption of special measures of health protection is based upon prompt notification of disease cases to the health authorities. These notifications form the basis for statistics of the prevalence of epidemic diseases.

Each of the communicable diseases offers its own peculiar problems of control: problems relating to the best methods of treating individual cases, of tracing the occurrence of infection, and of controlling its further spread. The problems of tuberculosis have attracted especial attention. These include, for example, the difficulties of case finding, the most feasible mode of preventing the spread of infection, safeguarding the milk supply, eradication of tuberculosis among cattle, hospitalization and segregation of active cases, community surveys. For many of these diseases our knowledge of methods of control is rapidly increasing. Mention may be made of the recently developed method for immunizing children against diphtheria, of the recently discovered sera against whooping-cough and measles, and of the possibilities for more effective public health work which these and similar developments hold forth.

Other diseases also present their special problems of treatment and control. Such diseases as organic heart disease, cancer, exophthalmic goiter—the prevention of each offers peculiar problems. Often researches are required into the causation of the disease or into the factors that favor or promote it. In some cases further research is needed to discover effective methods of treatment and of control.

CLASSIFICATION OF STATISTICS

The statistics required for the development of public health control over specific diseases may be divided into 5 groups: (1) figures relating to notifications of communicable diseases; (2) mortality rates classified by causes; (3) special studies of the incidence and trend of certain especially important diseases; (4) sickness statistics; and (5) data concerning the extent and use of public health resources.

Considering first notifications of epidemic or communicable diseases, these have long been used as part of the administrative machinery of prompt action to prevent spread of infection. But in all cases where the dangers of epidemic disease are of international scope, such statistics, obviously, should be world-wide, and some method should be devised for circulating the information promptly. In this connection it is interesting to note that the beginnings of such statistics have

been made by the Health Organization of the League of Nations. Data showing the relation between prompt action and effective control or between laxity of action and failure of control would show the value of this method.

Statistics of mortality rates classified by causes require data on population exposed to risk as well as on deaths. The data should be classified by sex, age, and race, in order to make due allowance for these factors in measuring differences in rates and progress in control. These data are the indispensable minimum for any adequate statistical analysis of the facts, for correct measurement of the problem which each disease presents, and for correct measurement of progress in its control.

For example, statistics of deaths from typhoid fever, tuberculosis, diphtheria, cancer, and smallpox are necessary to a correct evaluation of the specific problem of each of these diseases. Are existing measures effective? Are greater efforts needed? What specific results can be credited to specific measures? We need data for each health area made available promptly enough for effective use and so analyzed as to permit of drawing sound conclusions.

DISEASES AND PUBLIC HEALTH RESOURCES

For certain diseases, for example cancer and tuberculosis, special studies are needed in order to ascertain the true importance of the disease as a cause of death and changes in the trend of the death rate. In the case of cancer, peculiar difficulties are encountered because of the frequency of inaccurate diagnoses and because of the possibility that an improvement in diagnosis may affect the trend of the mortality rates. In the case of tuberculosis, analysis is required not only by age, sex, and race but also by methods of treatment. Can the best modes of public health control be determined from the available statistical evidence? Special statistical studies of deaths from each of these diseases offer the only means of arriving at answers to many important questions raised in regard to them.

But the importance of each disease should be appraised from the number of cases as well as from the number of deaths. Statistics of sickness, therefore, are needed. Only the number of cases of each specific disease will reveal its true prevalence. The available sickness data depend for the most part either upon notifications which are usually limited to epidemic diseases or upon claims for sick benefits, which are not as yet widely extended in this country. Data are required on the prevalence of colds—coryza—and other minor ailments that are sufficient to cause disability as well as on the prevalence of pneumonia, typhoid fever, diphtheria, smallpox, and so on. Adequate case records would furnish invaluable evidence from a scientific point of view of the incidence of sickness—the case rate—and of the seriousness of sickness —the fatality rate.

Data are also required as to the number of operations of each type, the indications upon which they are performed, and the outcome. In certain types of cases, information as to the correctness of the provisional diagnoses would be of special interest.

For assistance in controlling specific diseases evidence is required, finally, on the available public health resources and on the extent of their use. Data are needed, for example, on the number of physicians with due regard to their specialties, the number of hospitals, and the number of nurses and other persons who are concerned with public health. As to the extent to which these resources are actually used, such data, for example, as the number of cases of each disease in which a physician was in attendance prior to death would throw light upon the extent to which physicians' services are sought in sickness cases of the different diseases. Data on the use of physicians' services and public or private hospitals, and on the prevalence of annual physical examinations should be available.

CONTROL OF HEALTH

The second group of problems is concerned with the control of health, so far as it is affected by occupation and industry. These problems differ from those of the first group in that the approach to control is not primarily directed toward specific diseases, but toward health conditions in particular occupations and industries. The conditions which surround industrial workers must be studied to show the health hazards connected with their work. Their physical condition should be examined, the character of exposure should be analyzed, and the kinds of health risks determined, with reference both to mortality and to morbidity. Such studies are an essential preliminary to a thorough-going attempt to better conditions and to remove health hazards.

For this purpose at least 4 types of statistics are required giving data on: (1) occupational mortality, (2) occupational morbidity in general, (3) sickness and death from specific occupational diseases, and (4) the scope of occupational or industrial health protective measures. Statistics should be available on occupational mortality, with due regard to exposure, classified by sex, age, and race, in order to measure the risk to health in each occupation. Special attention should be paid to causes of death that indicate the presence of specific occupational poisons or dangers, such as lead-poisoning, tuberculosis, accidents, etc. Such statistics furnish, in fact, the essential basis for discovering the effect, which otherwise might be unrecognized, of occupational or industrial conditions upon mortality. At present no comprehensive occupational mortality statistics are available for the United States. But the English statistics on this subject are a model of what we should be able to secure.

At first probably the data should be confined to the northeastern section of the country, east of the Mississippi and north of Mason and Dixon's line and the Ohio River, for which the records of mortality and occupations are relatively good and which contains a large proportion of the manufacturing and industrial population. The information in regard to occupational hazards secured for this area would doubtless apply, in large measure, to similar occupations and industries in other sections.

Statistics of occupational morbidity, in the broad sense, are needed to show the relation between industry and occupation and the prevalence of sickness from each and every cause. As in the case of figures relating to morbidity from particular diseases, such statistics are at present available only for small groups of the industrial population—groups which are covered by sickness benefits.

Statistics of sickness and death from occupational diseases in the narrow sense of the term should be collected with special regard to the administration, costs, and adequacy of compensation laws. These diseases include, for example, caisson disease, anthrax, "phossy jaw" and others. A few states now grant compensation in such cases, but even a smaller number publish statistics of the number of cases and deaths and the proportion of these which are compensated.

ESSENTIAL FACTS ON INDUSTRIAL HEALTH PROTECTION

Statistics relating to the scope of occupational or industrial health-protective measures should answer such questions as, what proportion of establishments in each industry attempt to protect the health of their employes through industrial clinics, health examinations, industrial physicians, or other measures. One or two states have already attempted to collect such figures. The United States Public Health Service has made one or two surveys, and the National Industrial Conference Board has published the results of two or three studies. These are steps in the right direction. But we greatly need both comprehensive data on the prevalence of such health protective measures, and evidence upon which we can determine the value of each method.

The third group of problems relates to specific forms of attack upon particular types of risks, where the basis of relation is neither the disease nor the occupation. In this category come the problems of infant mortality, which are concerned with the questions affecting the age group, under one year, for example, type of feeding and attendant at birth, cause of death, and other factors that influence the care infants receive.

To this category belong also the problems connected with maternal mortality; with the health of young children who are in foster homes or in the charge of orphan asylums or other child care agencies in which high mortality rates prevail; with school health supervision; and with the health of the inmates of institutions, such as those for the feebleminded, the defective classes, and the insane.

Among the data required for control of these problems the following should be mentioned: (1) Statistics of stillbirths by causes, attendant at birth, and whether the birth occurred in a hospital. (2) Infant mortality statistics, by causes, whether the child was legitimate or illegitimate, what type of feeding it had received, and other points. (3) Statistics of maternity care. (4) Studies of the mortality of maternity. (5) Studies of the sickness and mortality, with regard to exposure to risk, of children in institutions, and in the charge of child care agencies, in conjunction with data on measures of supervision. (6) Studies of the scope and effects of school health supervision. (7) Studies of the health, morbidity and mortality of inmates of different types of institutions.

PROBLEMS OTHER THAN HEALTH

Finally, research is needed to throw light upon problems that do not fall definitely into any of the other groups. We need, for example, studies to show the influence of temperance upon longevity, of heredity upon length of life, and of disease control upon the ultimate physical stamina of the race. Each of these problems requires the collection of special data. Each usually requires also a special type of analysis if correct conclusions are to be reached.

Turning from the problems of health, two other groups of problems are concerned with the prolongation of life: those connected with accidents and those connected with violence.

In the United States the subject of safety has only within relatively recent times attracted the attention it deserves. Industrial safety has received increasing attention since the passage of workers' compensation acts beginning about 1910. These laws led to a rapid development of the safety-first movement in industrial establishments. Meanwhile, with the extensive use of the automobile, dangers of traffic accidents have increased many fold, and these dangers have drawn attention to the problem of public safety. But the problem of accidents in the home has as yet received little attention.

On these topics we need statistics in order to appreciate the extent of the problem, to ascertain the causes of accidents, and to throw light upon methods of prevention and upon the results obtained.

For an adequate appraisal of the problem of accidents, statistics of fatal accidents are far from satisfactory. We need data on all accidents, classified by severity and by industry, and placed in relation to exposure to risk measured in terms of hours of employment. For each major industry we need data analyzed by primary causes so that the hazards of the particular industry may be recognized and removed. Also, we need data to show the significance of secondary causes or contributory conditions in order to appraise the importance in producing accidents of such factors as inadequate lighting, too long hours of work, fatigue, and ill-health of the worker.

These data represent, in large part, additions to our present stock of statistics. A study of existing data reveals that except for three main industries—the railroads, the iron and steel industry, and

mining—adequate analyses of the causes of accidents in relation to industry and with reference to exposure are lacking.

NEED FOR PUBLIC SAFETY DATA

With regard to public safety also, data are needed not only on accidents that result in death, but also on other injuries, together with such analysis, by causes and surrounding conditions, as will throw light on methods of prevention. Excellent work has been done in this field by the special committees appointed to study the subject. It remains to put their recommendations into effect and to utilize the results, as measured statistically, in reducing the frequency of accidents on the public streets.

Similarly with regard to accidents in the home, data are needed to show the causes of such accidents and the ways by which they can be reduced. For this purpose details are required not only in regard to deaths, which are covered by general mortality statistics, but also, in regard to less serious accidents, most of which go unrecorded. In this case, however, special difficulties are to be encountered in obtaining adequate reports.

The high mortality from homicide or violence has aroused general interest since the war. This phenomenon is ascribed by different groups to a variety of causes, ranging from a new crime wave, augmented by bootlegging, hi-jacking, and the general disrespect for law alleged to be fostered by prohibition, to an increased prevalence of crime due to the demoralizing effect of the war and of the unemployment which accompanied industrial readjustments following the armistice. Basic figures showing the prevalence of this form of violence are to be found in the statistics of deaths from homicide. An analysis of such statistics, especially for the larger centers of population, throws light upon these aspects of the crime situation and upon the need for appropriate action. But in addition to the number of deaths from violence other data are required to measure the extent of these problems and to aid in their control. General data on crime and law enforcement are needed to bring about a full appreciation of the needs, and to throw light upon the methods appropriate to deal with these problems of public order effectively. Such problems demand reforms and call for adequate data to make the demand effective.

DATA SHOULD BE COLLECTED DESPITE COST

In conclusion, when we realize the great possibilities of control over these vital human problems, the need for additional data appears urgent. The importance of the purposes for which we need improved vital statistics far outweigh the cost of their collection. To be of maximum usefulness such data must be definitely related to the problems and be sufficiently detailed.

Our task is, in short, threefold: We must develop our resources in the way of vital statistics to meet more nearly the possibilities for the control of major problems; we must mold these resources constantly to the particular needs; and we must emphasize the character and size of the problems and the great possibilities for their control in order to call forth those funds and appropriations required for the realization of the statistical part of the entire program of protection of life and health.

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NURSING IN RELATION TO THE THREE PLANS FOR MUNICIPAL HEALTH DEPARTMENTS*

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ANALYSIS OF PLANS

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THE PLANS for municipal health department organization have been developed largely from studies of current health department practice during the past six years. In 1920 a study of large cities (those over 100,000 population) was made under the auspices of the Committee on Municipal Health Department Practice. As a result of this study Professor C.-E. A. Winslow, chairman of the committee, in compiling the report included a description of an ideal health department for a city of 100,000,[1] drawing freely from the experiences of cities that had developed workable organizations. The plan of organization for cities of 50,000 population[2] was based upon the experience gained by the American Child Health Association from its survey of health activities in 86 cities ranging in population from 40,000 to 70,000. Likewise the plan for a city of 20,000 written by Professor Ira V. Hiscock[3] was based upon a study of 21 towns of from 10,000 to 30,000 population.

These suggested plans of organization were subjected to trial and criticism by health officers throughout the country and an attempt made to bring out specific criticisms and suggestions relating thereto at the American Health Congress. At the same time a basis was laid for the development of a plan for rural or county health work. Using the material at hand, and seeking the advice of outstanding men engaged in public health administration in communities of these various sizes, the Committee on Administrative Practice brought together these suggestions for desirable organizations.

A common objective has been assumed and a program of health activities standardized, as far as possible. It is my purpose to give you outstanding facts of the nursing service contemplated in these three plans, namely, to show: the consistency of thought; the variation in extent and intensity; the changes in staff made necessary by the size of the community; and other pertinent facts bearing on the nursing service.

In considering each plan the size of the community must be kept in mind: Plan I—City of 100,000; Plan II—City of 50,000; Plan III—Community of 30,000 (20,000 urban and 10,000 rural).

The nursing staff suggested for these plans is shown in Table I.

It will be noted that the intensity of nursing personnel is approximately the same in the three plans. It is slightly

* These papers give the substance of the discussion of the Second Session on Public Health Nursing at the Fifty-fifth Annual Meeting of the American Public Health Association at Buffalo, N. Y., October 14, 1926.

greater for the smaller community, though this increase is probably not equal to the increased time required to administer the rural aspects of the service. The small staff calls for more highly trained and better qualified personnel. The supervision of the service requires a person with broad experience, one who is thoroughly familiar with the details of the several activities carried on by the nursing service.

TABLE I

NUMBER OF NURSES

	Plan I	Plan II	Plan III
Chief	1	1	1
Supervisor	5	2	..
Special Supervisor	2	..	..
Staff Nurses	44	22	5
Total	52	25	6
Population per nurse	1923	2000	5000

The per capita cost of the nursing service and the proportion of the total health department budget devoted to this activity as shown in Table II, presents interesting relationships. The per capita cost for nursing service in the smaller community is about one-half of that estimated for a community of 50,000.

TABLE II

COST OF NURSING SERVICE

	Plan I	Plan II	Plan III
Total Budget	$86,190	$44,800	$11,500
Per Capita Cost	.862	.896	.383
Per cent of Total Health Department Budget	39.7	49.4	27.3

The proportion of the total health department budget expended for nursing is higher in the small city (50,000) since certain other services are not required to be developed so extensively as in a city of 100,000 and more. This is particularly true of laboratory service, communicable disease control, tuberculosis control and sanitary inspection service. In the rural community the proportion of total expenditures for nursing service is considerably less than in either of the other groups. This is not to be construed as the ultimate division desirable, but rather as what seems to be proper, considering the present state of development of rural work.

The distribution of nursing time in the various services, depending upon whether bedside care is a function of the service, is shown in Table III.

TABLE III

DISTRIBUTION OF NURSING TIME

	Plan I		Plan II	
	Without Bedside Per Cent	With Bedside Per cent	Without Bedside Per cent	With Bedside Per cent
Communicable Diseases	15.4	8.8	15.4	8.9
Tuberculosis	9.1	5.2	9.3	5.3
Venereal Disease	3.7	2.1	3.9	2.3
Prenatal	26.1	14.9	24.5	14.0
Infant	17.5	10.0	18.0	10.3
Preschool	4.0	2.3	4.1	2.3
School	24.2	13.8	24.8	14.3
Bedside	..	42.9	..	42.6

Plan III

	Per cent
In patients' homes	28.0
In district health conferences	30.0
In school and clinics	11.0
In staff meetings and coöperative visits	10.0
In travel	21.0

The distribution of nurses' time for Plan III has not been worked out as for Plans I and II, and though it may not be the ideal it is suggested as a distribution which may be workable at the present time.

The stage of development of the nursing service will influence to a considerable degree the time distribution in a particular area. As activities become better established there is a necessity for reorganization of the nursing time, but the distribution suggested is based upon a uniform stage of development of all activities. Delivery and postpartum nursing care are included in the per cent allotted to prenatal care. The allotment for bedside care carries with it a considerable amount of educational time which may influence the development of other activities.

A number of cities are carrying out some part of the program to the extent indicated. There is no instance at the present time where a city has adopted the program *in toto*. Local conditions frequently prevent or delay equal and uniform development of all services and it is probably too much to expect that cities subject to our present democratic form of government could ever adopt and administer such a program under one organization. Therefore, one must look at the combined picture of public and private efforts.

Inability to point to a specific instance of a complete adoption of the nursing program as outlined in these plans does not indicate the undesirability of individual features, the details of which are based upon average community needs.

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I SHOULD like to explain somewhat briefly how we arrived at these estimates of nursing requirements which Dr. Walker has presented to you. In the original plan of health organization, the number of nurses needed was calculated on the basis of 1 nurse for approximately 2,000 people. At the time this plan was prepared there was practically no information suitable for use as to the length of time required for a given type of nursing visit. Relatively little had been done toward the establishment of standards to indicate the number of nursing visits of various types which should be made in the average community. Certain questions naturally arose, therefore, concerning the suggestion that there should be provided 1 nurse for every 2,000 people.

Recently, however, there has appeared a valuable report from the East Harlem Nursing and Health Demonstration in New York City, which shows for the district studied the length and cost of a visit in the home according to the type of service rendered. In making use of this report, we have consulted leaders in the nursing group and health administrators. Please do not think that these three men on the program have attempted to suggest a program of organization of public health nursing work without full discussion of the problems with many representatives of the nursing profession. Many helpful suggestions have been received from the National organization for Public Health Nursing, and representatives of state, city, and voluntary organizations.

The report to which reference has been made shows that 51.6 minutes on the average are spent in connection with a home visit. On the average, 16.1 minutes are actually spent in the home, the remaining 35.5 minutes being spent on records, in supervision, general office work, travel, staff meetings, and miscellaneous activities. But the length of a visit in the home in connection with postpartum and new-born cases is 46 minutes on the average, as contrasted with 10 minutes, for example, in connection with a school case. A specific example may be helpful in making clear the exact procedure followed in this revised plan of health organization. If it be assumed that in the average city of 100,000 people, the birth rate is 24, then there will be 2,400 births in a given year. *The Appraisal Form for City Health Work* suggests as a reasonable standard of field nursing service for infants under 1 year of age, that there should be 4,000 home visits per 1,000 live births. In the city of 100,000 population, then, there should be 9,600 home visits. To make these visits, each of which would consume 51.5 minutes (on the average), would require a total of 8,240 nurse hours for the year. In addition, there should be 2,500 infant clinic visits per 1,000 live births, and this would require 480 additional nurse hours, making a total of 8,720 nurse hours in connection with the care of infants under 1 year of age. If it be assumed that, on the average, there are 250 working days of 8 hours each, allowing for vacation, and so forth, a single nurse may be counted on for 2,000 hours of work in a year. In a similar way the total amount of time and nursing personnel may be determined for each type of activity, as prenatal, school, and so forth. To the total staff nurses (44) required must, of course, be added supervising nurses (5), including also a special supervisor for mental hygiene, and 1 for nutrition.

It is very interesting to find that the total number of nurses required as calculated on this basis compares very closely with the number earlier suggested by Professor Winslow. One of the chief differences is that the earlier plan called for only 1 communicable disease nurse,

whereas the present plan calls for 4 nurses. Certain minor deductions for other types of work tend to balance this addition.

BASIS FOR ESTIMATES

You may rightly question our application of data derived from a demonstration in a large city to this proposed plan. It is true that the situation in the East Harlem Health District is somewhat unique. But upon careful consideration of various aspects of the problem, it has seemed to us that the source of error is not large enough to be significant. Our previous estimates concerning nursing time have, for the most part, been based upon the assumption that a nursing visit in a city on the average requires one hour. The average figure for this study quoted is only slightly less than this, and the figures have the added virtue of differentiating between different types of nursing visits to show, for example, that it takes nearly twice as long in a home to make a postpartum visit as it does to make an antepartum visit. Hence, we have taken these data, with certain reservations, because they seem to answer fairly well our needs, and they are the only data which have been presented in such detail, so far as we are aware, for this purpose.

Finally, permit me to call attention to the fact that public health nursing occupies a very important place in a program of community health organization. This work in most communities to-day receives a large share of the official or voluntary health budgets. This section of the plan of health organization is one upon which we perhaps need advice most. The preparation of the outline has necessitated certain deliberate assumptions. Suggestions or criticisms as to the soundness of the principles and general features of the plan will be appreciated.

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THE background for these conclusions is a municipal nursing service which has developed during the past fifteen years through tuberculosis, child welfare, a combination of the two and the inclusion of hospital social service and school health service, up to the present organization which includes all the public health nursing services of the city with the exception of industrial nursing and bedside nursing. A splendid national nursing organization has a local branch with 45 nurses giving bedside care on a fee basis. The city nurses, totaling 114, are organized in 10 service units, 9 district groups, and 1 group of 15 nurses assigned to the hospitals but working through the district offices. Included in this staff of 114 are a director, assistant director, 9 district superintendents, a superintendent of hospital social service and 4 functional supervisors. Each field nurse has a small district in which she gives all types of service.

The results have proved that a sympathetic and effective contact can be made with the homes by public health nurses who may not depend upon the incident of illness for an entry to the homes.

Coördination of bedside nursing care with the general health services will be considered if the visiting nurse association decides that it is essential to the community that the health services should be strengthened by the teaching opportunity offered by bedside nursing.

A COMPLETELY GENERALIZED SERVICE

Arguments in favor of a completely generalized service: The nurse whose service ends with the patient's illness realizes her opportunity to use that illness as a basis for constructive work in the home. The nurse who is not permitted to give bedside nursing care frequently longs for the opportunity to give a tangible service which would dispel barriers between her and many homes needing her knowledge.

City councils who reflect the sentiments of the taxpaying public will grant money more readily to the organization giving nursing care in illness than to the organization refusing that care.

When the public seeks health service from the private physician, and when he is prepared to give that service, we may expect a higher standard of public health. The leaders among private physicians, the medical schools and many departments of public health are working toward that end. When the public health nurse who has worked under the private physician's orders during a patient's illness may continue to visit the home which needs the supervision of a health nurse, we may anticipate that she

will influence the family to seek the advice of the family physician more frequently. The present need for an educational service apart from the private physician, is resulting in a questionable growth of health centers.

The proposed organization would provide service in sickness and in health, simplifying the situation for the general public, social workers, hospitals, and physicians. It would not be possible in a crowded city to arrange for every nurse on the field staff to carry, unaided, the full service for her district. In normal times, the nurse in a suburban area could probably do so with the exception of the occasional case of critical illness and the confinement service.

The community with district offices and a superintendent of nurses in each office, would leave her to adjust the duties of her individual nurses. The majority of those nurses would have clearly defined areas within the district. One or more nurses would be retained as "floats" to make the urgent visits which could not be made by the family's own nurse. At certain times of the year, and during epidemics, it might be desirable to increase the number of floats rather than to rearrange the small district with resulting dislocation of neighborhood contacts. It might not be wise to attempt a completely generalized service with a fixed staff.

SOURCES OF INCOME

The sources of income would vary in each community. An agreement would be reached as to which of the services should be paid for from the public purse and which from the private purse. A coördination of committees representing public and private agencies would be necessary. In the majority of communities, bedside nursing care, which normally would be given by a member of the family, would not be paid for from the public purse. The taxpayers in some communities are already prepared to pay for all other nursing services. It is essential that the policy regarding payment should apply to all classes, since a distinction with respect to bedside service in favor of the poor and the ill-informed might result in a limited use of all types of service by the more favored classes. Money collected for services not assumed by the public purse should be collected on an individual fee basis from the patient or his friends, from the insurance company, or from a social agency interested in the patient.

DETERMINING THE COST

The actual cost of an hour of nursing time having been ascertained, the nurse's daily work report would provide the accountant with information from which accounts could be sent to the department of public health and to the private organization which had accepted responsibility for certain types of nursing care. That organization would then collect from the patient, insurance company or social agency, using the hour as the unit of cost.

The educational value of this method of accounting and of fee collection would become apparent if the future should bring consideration of social legislation requiring general knowledge of the cost of high grade medical and nursing services.

Since the cost of an hour of service would be determined on the basis of a normal working day, income derived from overtime service would not be required for the maintenance of the organization. This income would indicate the need for additions to staff. When not used for that purpose, it might be returned to a council of the nurses, to be used for staff projects suggested by the nurses' council and approved by the governing board of the administration.

The governing board would necessarily combine the interests of public and private agencies since both provide the income. If essentials are guarded, the administration might be under either public or private control.

ESSENTIALS OF ADMINISTRATION

1. The governing board should represent both public and private agencies.

2. A high grade executive staff is required. Too much emphasis cannot be placed upon the leadership required of the district superintendent. Functional supervisors should not intrude upon her responsibility or be appointed to deal with special functions unless the need is clearly proved.

3. All services should be available for the privileged as well as the underprivileged. Bedside nursing care should be provided on an hourly fee basis.

4. Provision should be made for additions to the staff when there is a rise in the incidence of disease requiring bedside care.

DIRECTING A GENERALIZED SERVICE

Direction of a generalized community nursing service by the public agency is desirable for the following reasons:

1. The public agency can bring about coördination of public and private agencies, and delegate functions, but it is difficult for representatives of a public agency to participate in work directed by a private agency.

2. The nursing service of a public department makes articulate that thing in government which lies buried in the heart of every alderman.

3. The nurse who visits the homes as a representative of government can interpret the essential qualities of government where all other influences fail.

4. The public health nurse employed by the people whom she serves finds the relationship a happy one. She is particularly happy when she may interpret the needs of her clients to intelligent philanthropy.

Recognizing the nurse as an influence for the advancement of social welfare, we covet for her the strategic position of a public employe.

GRACE ROSS, R.N.

Superintendent of Nurses, Department of Health, Detroit, Michigan

GENERALIZED nursing in city-wide application seems to us remote because of the training it requires. Miss Dyke has the good fortune of employing on her staff only those nurses who have already taken training in public health nursing.

Dr. Winslow stated in his Rockefeller Report which came out four or five years ago that the ideal training for the public health nurse is an 8 months postgraduate course in public health nursing. With a staff already trained, the Nursing Division of the Detroit Health Department would feel no hesitancy in combining bedside nursing with the educational program, as far as it is possible, realizing, however, that certain services and certain bedside care cannot be combined.

The department that must supply an equivalent for that 8 months intensive training as well as administer its service presents a very different problem. To make nurses produce satisfactory results at a minimum cost to the taxpayer is a requirement which may not be overlooked, and a staff with a heavy turnover, if it gets its work done, cannot devote its whole machinery to the training of nurses. In order to serve the needs of the community, and at the same time make a contribution to the education of nurses, the Nursing Division of the Detroit Health Department still feels that it can best do so by operating a specialized nursing service with only that number of nurses doing its generalized work which it has been able to properly train. With such a heavy educational program in preparing nurses for all the department's activities, it seems advisable not to combine bedside care.

The staff of the Visiting Nurse Association numbers 96, making it necessary to train that number in generalized public health work and to train 278 nurses in bedside care. It takes the local association 2 months to accomplish the latter. Without dwelling on what it costs to train 96 nurses in all the Health Department's activities, and figuring only on what it would cost to add bedside care, if its staff were already trained in all its own divisions, which it is not, 278 nurses' training would represent 42 years at the minimum salary of $1,560, making a cost of $65,520. This change would result mainly in the elimination of duplication, which the Visiting Nurse Association and the Health Department state scarcely exists. The visiting nurses already teach personal hygiene wherever they go and with practically no duplication there seems little to be gained at so great a cost.

There is, however, great advantage in having only two agencies in the public health nursing field in Detroit, the Visiting Nurse Association, and the department's public health nursing staff, and we appreciate the fact that all nursing outside of routine bedside care is administered through the Health Department. There are many good reasons, from an administrative standpoint, why these should be so combined. A variety of services tends to refresh the nurse mentally. She goes back to school each time she is transferred to a new service, and as a result becomes a better worker. She has the advantage of several supervisors' training. The well educated nurse, whom the organization would dislike to lose, who may not be so attracted to one type of work may find outstanding success in some other. There is better opportunity afforded to discover and place potential head nurses, better opportunity for balancing activities, better handling of emergencies or epidemics by adding immediately nurses already trained in these services, and many other reasons could be named.

This educational plan moreover tends to stabilize the staff as local figures show. At the

end of three years 30 per cent of the same staff still remains with the department but 40 per cent of this 30 leaves at the end of the educational program.

The combining of both organizations in the Health Department which has been suggested is not favored and would work a hardship to the program of both, for both can obtain money more readily by operating under separate funds. Generalized work costs more than other types because of the increased burden of training and increased supervising staff upon which this depends.

Our conclusion is that the large city health department will in great measure have to wait for its city-wide application of the generalized public health nursing program, until greater numbers of nurses already trained in public health knock at its door; that meanwhile the plan should not be approached rapidly nor at the expense of nurses' training; that a step can be taken by combining gradually all the activities of health departments which are more readily combined; and the addition of bedside care can be brought about as the final step necessary in conforming to the ideal plan.

ANNE L. HANSEN, R.N., FELLOW A.P.H.A.

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WHY do we have public health nursing? The answer surely would be: To prolong human life and in so doing to give expert nursing care and comfort to the sick and to educate in the prevention of disease through lessons of hygiene and nutrition.

We then may ask what constitutes a program of good public health nursing for an entire community. The answer would surely be that every citizen irrespective of race, creed, social position, or financial status shall through some organized force be shown how to prolong his life and receive expert care when sick.

Next comes the question of how an organization prepared to give the service to the community shall be organized.

First: The necessity of a representative board or council responsible to the general public for the work of public health nursing for which adequate funds shall have been provided by the community.

Second: Where the organization is official the chief of the department should be the chief health officer and under his immediate direction should be a director of nursing who shall head up all divisions of the work. These two should meet with the board or council for deliberation.

Third: There shall be sufficient supervisors so that no one shall have more than 9 nurses in her charge. Each supervisor shall be properly prepared for the duties assigned to her through postgraduate experience and study, and each shall be chosen because of attributes of real leadership. The position of supervisor must also be that of teacher, and with her group she should be capable of discussion in case work.

Fourth: The staff nurse should be chosen, first of all because she is an expert in technical nursing and with unassailable educational qualifications. She must have a receptive mind, a tremendous interest in folks, be constantly eager to develop her work with a spirit reaching out for adventure.

Fifth: A well thought out, adequate program is needed for staff education.

Sixth: The remuneration of public health nurses should be such that they may live comfortably, with a margin for savings and therefore no worry for the future.

The work of a group of public health nurses is twofold—in the community and with the individual family. Community work includes all types of health clinics for adults and children, including those of mental hygiene and nutrition, mothers' clubs, lectures and talks for both large and small groups. In the home when there is sickness the work of the nurse naturally centers first around the patient, but she sees him as a part of the whole group. However, the entrance of the nurse into the home of sickness provides by far the most valuable opportunity for a demonstration to the family of what expert nursing care means, and at the same time teaches the lessons of public health.

The ideal has been sketched. If perchance there is a community where one agency, official or private, can meet this ideal there is then no question as to the type of agency which shall work in that community. Since most communities are not able to produce an ideal situation, it follows that in order that the complete program for public health nursing shall not be denied to the citizens, more than one agency will be required.

In one or two cities the plan of amalgamation of a private and public agency has been made and found to work out admirably. In this instance the two organizations have pooled their resources, a governing board has been organized representing the two agencies and the director of the bureau of nursing has been placed in charge of both groups of staff nurses with expert supervisors and the work put on a generalized basis. The private agency has ever been the pioneer in public health nursing. It has been peculiarly able in most instances to continually develop its work toward higher and still higher ideals. Very many of the functions carried by the private agency belong very rightly under official control, and one by one such agencies have released their work to public control. Before doing so it is very definitely the duty of the private agency to be assured that the work which has developed shall be conducted with more efficiency after a change is made.

It is conceivable that a public agency may reorganize, giving a generalized program, with a limited amount of bedside work in emergency cases only. In such a situation the private agency would be compelled to function in order that expert nursing care be continuous in case of sickness. In any event the private agency must be assured that the work will not come under a public agency which in any manner is governed or swayed by politics. In many communities to-day existing conditions are such that a public agency putting on a perfectly splendid program of public health nursing over a period of years may find its whole outlook changed by new political domination.

The point I have tried to make is that service, expert, efficient, human and real to the community, is what we are looking for, whether this shall be done by a public agency or a private. Until the ideal can be reached by an official agency, the private agency must function with it in close coöperation.

I am convinced that there will always be need of the private agency particularly for the work of certain types of visiting and hourly nursing. The indigent together with many of moderate means quite naturally fall under the care of the public agency. There will always be a large group of patients who would refuse the care of a public organization, preferring to be perfectly independent and pay the cost of nursing care to the private agency. For these people the private agency must exist and it must set up certain clinics for the benefit of this group of independent persons desiring to pay for their own service. I would particularly mention here the prenatal clinic so that there can be continuity of service for the maternity case, and this is true under whatever auspices maternity care is given; namely, that the prenatal clinic be under the direction of the agency giving the delivery and postpartum service.

Research work, together with the development of new work and carrying it on through an experimental period, will always be the function of a private agency.

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IN regard to Professor Hiscock's statement—the discrepancy between one and four for communicable disease nurses is not quite so wide as it seems, because in the 1923 report we assigned certain duties to the nurse which Professor Hiscock assigns to a sanitary inspector. On the whole I am very much pleased that these investigators have so nearly confirmed our original standard. In 1923 we arrived at the figure of 57 nurses per 100,000 population by a process which my friend Dr. Fulton used to call a conservative "guestimate." Professor Hiscock using a very careful method of computation comes out with 52 against our 57.

I am not quite in agreement with what Miss Ross said about additional expense. Of course there is a great saving effected by generalized nursing in the cost per visit; but on the other hand you would have an increased cost per nurse on the generalized plan because of higher cost of nurses needed and the more intensive supervision. Miss Ross is quite right in her point that it is dangerous to adopt the generalized plan unless the qualifications of the individual nurse are reasonably high.

I am absolutely in accord with what Mrs. Hansen has said and I think Miss Dyke's paper was one of the finest and most statesmanlike contributions I have ever heard at any meeting of this association.

ENTERIC INFECTIONS SIMULATING TYPHOID IN VIRGINIA *

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THE NECESSITY for adequate laboratory methods in the diagnosis of enteric infections has been emphasized in several previous publications.[1] The object of this paper is not to discuss these methods but rather to bring out the practical importance of results obtained by their use. The methods on which this work is based are first, the blood culture; second, the macroscopic agglutination test; and third, the bacteriological examination of feces. While we still make a limited number of Widal tests with dried blood the results of this test are not included in this discussion.

There have been numerous studies of enteric fevers in various parts of the world, namely in Egypt,[2] in the Canal Zone,[3] in Northern France during the war,[4] and in Southern Bavaria.[5]

We are not aware, however, of any similar studies that have been made in the United States. Studies in the tropics have always indicated that a large proportion of enteric fever is not true typhoid, but is due to other organisms belonging to paratyphoid (Salmonelle) and proteus groups. In the work done in the Canal Zone,[3] there are a number of para-colon organisms described. Just how these would fall within our present classification it is difficult to say. Castellani has also described a number of different organisms, found in tropical countries, which produce enteric fever. On the other hand, Dr. Gilbert's observation [6] indicates that most of the enteric fever in New York State is true typhoid. Judging from personal inquiry and a study of annual reports the same situation is general throughout the North.

While Virginia is usually considered a southern state it is, nevertheless, temperate in climate, and climatically may be said to lie between the north and south. Observations in Virginia indicate that while the typhoid bacillus is the predominating cause of enteric infections throughout the state, it is by no means the sole cause of enteric infection. The results of our observation so far seem to indicate a condition distinctly different from that existing in the North, in that a great deal of paratyphoid B. fever exists and also a considerable amount of bacillary dysentery. We have not found, however, the variety of organisms reported from the tropics, nor has the total of other types of infection equalled the number of cases of actual typhoid fever. That is, just as climatically we occupy a medial position so do we likewise in the character of our enteric infections.

In Table I a summary is given of all blood cultures made in the Central and Branch Laboratories of the Virginia State Health Department including the city of Richmond, for 6 years, 1920 to 1925 inclusive. We have omitted from this table all positive findings of organisms such as streptococcus, pneumococcus, etc., and included only organisms of the typhoid-colon group. We have also omitted all unidentified or incompletely identified cultures.

* Read before the Laboratory Section of the American Public Health Association at the Fifty-fifth Annual Meeting at Buffalo, N. Y., October 13, 1926.

As shown in Table I, 93.6 per cent of all positive blood cultures showed the presence of typhoid. This, however, does not represent the true proportion of typhoid fever to other enteric infections, and until very recently misled us. While the dysentery bacillus may be found in blood cultures [7] such findings are very rare and more or less accidental. The small number of cases showing paratyphoid B. is also misleading and we have reason to believe that the paratyphoid B. bacillus remains in the blood stream for a comparatively short period and so is much less likely to be found by blood culture, than is the typhoid bacillus.

TABLE I

BLOOD CULTURE RESULTS FROM ALL LABORATORIES, 1920 TO 1925 (INCLUSIVE)

	Number	Per cent
Positive	425	17
Negative	2014	83
Total	2439	100

CLASSIFICATION OF POSITIVE SPECIMENS

	Number	Per cent
Typhoid	398	93.6
Paratyphoid B.	12	2.8
B. Coli	10	2.3
B. Fecalis Alkaligenes	2	.4
Paratyphoid A.	1	.3
Flexner* Dysentery	1	.3
B. Suipestifer	1	.3
Total	425	100.0

* The term Flexner is used to include all organisms of the Flexner, Hiss-Russell, and Y groups.

AGGLUTINATION TESTS FOR TYPHOID AND PARATYPHOID

In our early work in the city of Richmond, a number of blood specimens for agglutination, using the dried drop test, were examined not only for typhoid but also for paratyphoid A and B. No positive reactions were obtained for either of the paratyphoid bacilli, and this procedure was, therefore, never made a part of our routine. We concluded that paratyphoid was rare and ceased to look for it by means of a routine agglutination test. However, during the last 2 years, instances have occurred that caused us to change our opinion.

To illustrate, when one of our branch laboratories was first established several cases of paratyphoid B. were found by blood culture. One of the physicians in this locality stated that paratyphoid B. had been prevalent there for many years. In verification of his statement we might quote from Freeman and Marshall [8] in their report on an epidemic of paratyphoid B. occurring at Weyers Cave in 1909: "Prior to the present outbreak the town had been free from any continued fevers for the last 3 years . . . The surrounding country, however has been for many years heavily infected with a disease known locally as 'Valley fever,' supposed to be a mild form of typhoid."

We, therefore, started 2 years ago in this branch laboratory a routine examination of all blood for the 2 paratyphoids, as well as for typhoid. These results are shown in Table II. Even though typhoid has on the whole predominated in the work of this laboratory, there have been periods of 6 months at a time during which paratyphoid B. appeared quite regularly without any cases of typhoid fever being found. Paratyphoid B. occurs regularly and consistently in this section and may be said to be endemic.

Another incident, which is typical, brought home rather forcibly the possibilities of paratyphoid B. This special case had rather a severe infection of paratyphoid B. His companion, on the other hand, who was undoubtedly exposed to the same source of infection was clinically diagnosed as "intestinal flu," no laboratory specimens being taken. As "intestinal flu" is rather a popular diagnosis for a certain class of physicians, it is probable that many of these cases may really be paratyphoid B.

TABLE II

AGGLUTINATION RESULTS HARRISONBURG LABORATORY, SEPTEMBER, 1924, TO DECEMBER 31, 1926

Organism	Number of Specimens	Positive Results	Per cent Positive
Typhoid	233	56	24.1
Paratyphoid A.	233	1	.4
Paratyphoid B.	233	17	7.3

As a result of these observations a routine agglutination of all sera against both typhoid and paratyphoid B. was undertaken. In cases especially indicated,

and to some extent as a routine, agglutinations were also made against paratyphoid A. and Flexner dysentery. The results of this work are shown in Tables II and III. No specimen was called positive unless it showed a distinct agglutination at 1 to 50 and in the case of dysentery not unless positive at 1 to 100.

TABLE III

AGGLUTINATION RESULTS
RICHMOND LABORATORY, 1926

Organism	Number of Specimens	Positive Results	Per cent Positive
Typhoid	744	251	32.7
Paratyphoid A.	147	0	0.0
Paratyphoid B.	710	17	2.4
Dysentery (Flexner)	156	11	7.1

The results in Table II are from the section previously referred to where paratyphoid B. is endemic. Table III, on the other hand, is based on work coming not only from Richmond and vicinity, but also from the whole state. The percentage of positive paratyphoid B. cases is three times as high in Table II as in Table III. Likewise, the proportion of paratyphoid B. to typhoid is approximately 1 to 3 in Table II against 1 to 15 in Table III.

A comparison of Tables IV and V indicates an increase in the prevalence of paratyphoid B. and Flexner dysentery. With the limited information available, however, it is impossible to say whether this increase is real or only apparent. It is unquestionably due in a measure to a greater interest on the part of the physicians and more extensive use of the laboratory.

In the case of paratyphoid B. there may be an actual increase. Table I shows 12 blood cultures positive for paratyphoid B. out of 2,439, or an incidence of .5 per cent. On the other hand, in 1926, 16 cultures were positive for paratyphoid B. out of 1,070 examinations, or an incidence of 1.5 per cent.

CONFUSION IN DIAGNOSIS

In any event it is evident that paratyphoid fever and bacillary dysentery are both prevalent generally throughout Virginia. Furthermore, these infections are frequently diagnosed as typhoid fever by

TABLE IV

RESULTS OF BACTERIOLOGICAL EXAMINATION OF FECES FROM ALL LABORATORIES, 1920 TO 1925 (INCLUSIVE)

	Number	Per cent
Positive	104	9
Negative	1029	91
Total	1133	100

CLASSIFICATION OF POSITIVE SPECIMENS

	Number	Per cent
Typhoid	69	66
Paratyphoid B.	2	2
Paratyphoid A.	2	2
Flexner Dysentery	25	24
Shiga Dysentery	6	6
Total	104	100

TABLE V

RESULTS OF BACTERIOLOGICAL EXAMINATIONS OF FECES FROM ALL LABORATORIES FOR 1926

	Number	Per cent
Positive	152	16.9
Negative	746	83.1
Total	898	100.0

CLASSIFICATION OF POSITIVE SPECIMENS

	Number	Per cent
Typhoid	62	40.8
Paratyphoid B.	14	9.2
Flexner Dysentery	75	49.3
Shiga Dysentery	1	0.7
Total	152	100.0

clinical symptoms. This, of course, is generally understood in the case of paratyphoid, but it is not so generally known in regard to bacillary dysentery. We have in numerous instances, however, found cases and sometimes small epidemics of bacillary dysentery, which were considered to be typhoid fever—the diagnosis being based entirely on clinical symptoms without resort to the laboratory.

We have for several years considered the possibility of coincidental epidemics. Such findings might in the past have explained the failure in many an investigation to tie up a certain group of cases with the general epidemic. We have this year proved 2 definite occurrences of this sort. In one case an epidemic occurred in a small town following a street carnival. There proved on investigation to be really 2 epidemics, one of 17 or more cases of typhoid fever and the other of at least 7 cases of paratyphoid B.

A peculiar fever appeared in a boarding school this September. Investigation disclosed a case of paratyphoid B., probably imported, and several cases of Flex-

ner dysentery, which apparently originated in the school.

Paratyphoid B. has been found in 1926, in 17 counties in Virginia, and bacillary dysentery has also been found in 17 counties. Paratyphoid B. is probably endemic in certain localities as previously described. Bacillary dysentery, however, does not seem to center in any particular locality year after year. We have had severe epidemics of Shiga dysentery in several places, but in the following years we have been unable in these same places to find a single case. Flexner dysentery in recent years has also not been prevalent in the same locality in 2 successive years though a few scattered cases might be found.

CONCLUSIONS OF INVESTIGATION

The small series of results shown in the above tables may not justify broad general conclusions. In fact, this report should be regarded as a preliminary report—an indication of what may be expected from a more complete survey. Nevertheless, certain facts have been proved for Virginia and similar results might, we believe, be expected in any of our southern states. The results so far obtained seem to justify the following conclusions:

Paratyphoid B. fever is endemic in certain localities in Virginia and generally distributed over the state.

Bacillary dysentery is prevalent in Virginia; the Shiga type occurring principally in epidemics with an occasional sporadic case; the Flexner type being generally distributed, but also occurring in definite epidemics that may at times closely simulate typhoid fever.

Paratyphoid A. fever and other types of enteric infection occur but much less frequently.

Proper epidemiological work cannot be carried on without the aid of careful laboratory diagnosis.

The work so far seems to indicate that only combined typhoid and paratyphoid vaccine should be used in Virginia.

The prevalence of bacillary dysentery demonstrates the need of control of enteric infection by sanitation primarily, though vaccine may form a valuable aid.

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VENTILATION STANDARDS*

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A REVIEW of the theories advanced relative to the effects on man of varying chemical combinations of the air gases, and a glance at the multiplicity of opinions set forth pertaining to past practices in the art of ventilation, are apt to confuse the general reader and lead to erroneous conclusions. One who familiarizes himself with the history of ventilation will no doubt concur in the view expressed in a recent editorial of the *Lancet* that ventilation up to recent years has been a shibboleth rather than a science, a term which conveyed more comfort than meaning to those who used it. It is an accepted fact that human occupancy, under ordinary living conditions, is insufficient to change noticeably the chemical proportion of the constituent gases of the air. Even in air-tight compartments one is forced to leave long before the oxygen supply is exhausted or the carbon dioxide becomes excessive. It is true that the carbon dioxide content of a room is still made use of to indicate the quantity and distribution of air, but it has no further significance.

In discussing ventilation standards we sometimes fail to differentiate between the atmosphere which surrounds the body and exerts definite physiological reactions (depending upon the physical qualities of heat, moisture, and air movement) and the air breathed into the lungs. We cannot ignore the latter, because, no matter how satisfactory the physical properties of the air may be, the harmful effects of the impurities that contaminate the air, and are concomitant to the period of civilization in which we live, are well known and must not be overlooked in distinguishing between so-called "fresh air" and out-door air.

Nature bountifully supplies fresh air, but it is frequently necessary to purify, heat, cool, or otherwise condition the air in occupied places in order to obtain the desired freshness.

NEED OF STANDARDS

Space will not permit of a discussion of this phase of the subject, nor the evaluation of such properties of the air as ozone, ionization or other electrical qualities, important as they may seem. It is the object of this paper rather to emphasize the need for determining adequate standards by which to measure atmospheric conditions as they affect our bodies. Irrespective of how they may be controlled, standard air conditions must be established which will best meet the needs of human beings under varying conditions.

Certain definite degrees of temperature have been suggested as standards from time to time. At one time a standard of 70° F. (dry bulb) was proposed without reference to the wet-bulb temperature. At a later period the importance of the wet-bulb temperature was emphasized and 56° F. (wet bulb) received support as the optimum temperature. Our present conception, based on actual experimental work, with human beings as subjects, recognizes the influence on the body of not only the dry- and wet-bulb temperatures, but the velocity of the air current as well.

* Read at the Joint Session of the Public Health Engineering and Industrial Hygiene Sections of the American Public Health Association at the Fifty-fifth Annual Meeting at Buffalo, N. Y., October 12, 1926.

The relative importance of the temperatures indicated by wet-bulb and dry-bulb thermometer as each affects human comfort, varies with the actual temperature. The studies conducted jointly by the U. S. Bureau of Mines, the U. S. Public Health Service, and the research laboratory of the American Society of Heating and Ventilating Engineers, at Pittsburgh,* have demonstrated that the human body is affected more by the dry-bulb temperature, at the lower temperatures, and very little by the wet-bulb temperature, while at the higher temperatures the reverse is true. The two temperatures are of equal importance at about 67° F. "effective temperature." The greatest factor of all is air motion, because the coolness resulting from evaporation and convection largely depends upon the velocity of the air.

EVAPORATION, CONVECTION AND RADIATION

Unfortunately, no single instrument has been devised to determine the combined effects of evaporation, convection, and radiation on the human body. The ordinary mercury thermometer, as frequently demonstrated, is inadequate for this purpose as only that part of the body heat lost by radiation and convection is computed. A great part of the body heat, as we know, is eliminated by means of evaporation from the body surface. The kata-thermometer likewise fails to serve the purpose for which it was designed. Yaglou and others have indicated the defects and limited value of this instrument.

Therefore, until a more sensitive instrument is invented, it is necessary to measure the three physical factors of air in order to describe accurately any atmospheric condition. Knowing the values of these air factors, however, the studies at Pittsburgh have developed a thermal index of the atmosphere known as the effective temperature scale which indicates the comfort of a variety of atmospheric conditions. This index permits of a fairly wide range of variations among the three factors of the air whose united effect upon the physiological reactions of human beings remains constant. Several combinations of high temperatures and low humidities are equivalent both sensibly and physiologically to other combinations of comparatively lower temperatures and high humidities. The heat loss from the human body remains constant even though the temperature of the air is increased. For instance, assuming a temperature of 73° F. on a dry-bulb thermometer and 25 per cent relative humidity with still air, it was found by actual experiment, using subjects stripped to the waist, that this condition appeared to be equivalent to a dry-bulb temperature of 66° F. with 80 per cent relative humidity. Now if the latter dry-bulb temperature is increased to 79° F. the same equivalent condition will exist by increasing the air motion 500 feet per minute.

TEMPERATURES AFFECTING COMFORT

Different investigations have shown that certain combinations of these physical properties of the air are conducive to health and comfort. It was found by the New York State Commission on Ventilation, that so far as the schoolroom is concerned, air which has a temperature of 66-68° F. with a moderate relative humidity and a moderate, but not excessive degree of air movement is good air. Again, records made available by the Committee on the Atmosphere of Man of the National Research Council suggest that the best work was done by men in certain plants in a temperature averaging about 71° or 72° F. and a relative humidity of 40 per cent to 50 per cent; while the best work by the women was done at a temperature 7 or 8 degrees higher and at a correspondingly lower relative humidity. The experimental studies at Pittsburgh show that by far the most comfortable conditions, that were considered ideal for subjects doing work at

* The reader is referred to a number of progress reports of this study appearing in the *Journal of American Heating & Ventilating Engineers*, the *Public Health Reports*, and the U. S. Bureau of Mines publications.

a given rate of 90,000 foot pounds per hour with intermittent rest periods, were in a still air condition of about 70° F. with from 40 per cent to 50 per cent relative humidity. With air movement the temperature values were higher. These same studies indicate that within the effective temperature scale there lies a zone of comfort. This zone of comfort is wide enough to take care of acclimatization, individual variations of temperature comfort, and reasonable variations in the clothing worn during the different seasons of the year. It lies between 63 and 71° effective temperature with a majority of the individuals, normally clothed and at rest, preferring an effective temperature of 66° in mild weather.

OPTIMUM CONDITIONS VARY

The inference may be drawn from the above experimental work and practical experiences that certain optima conditions exist for people under different circumstances. It is doubtful in my mind, and others share this opinion, whether we should attempt to maintain a single optimum condition. May it not be that each individual reacts best to his own optimum condition, depending upon his physical abilities, the condition of his skin, the amount of clothing worn, nature of work he is performing, and no doubt many other factors, and that this optimum condition changes slightly from day to day? Certain conditions which seemed very satisfactory on one occasion, do not have the same effect on another. It has also been observed that a constant condition, no matter how desirable it may seem at first, becomes monotonous. Therefore, where groups of individuals are gathered together in an enclosed space a fluctuating temperature within a certain zone may best meet the demands of the majority. It remains to be determined whether these changes in temperature, humidity and air movement should be introduced slowly or rapidly; whether this zone should be broad or confined to a rather narrow range of temperature; and similar determinations. It may be that an intermittent sweep of air will answer this purpose. Experiments along these lines are now in progress at Pittsburgh. With this information available the laboratory has gone as far as is practicable to do so. The results obtained must then be applied to large groups of individuals under varying circumstances.

The solution of these problems lies in the close coöperation of the professions responsible for the progress in this direction. Tribute should be paid to the engineering profession which has made it possible to produce and maintain any combination of these three physical factors of the atmosphere. With a standard established, we can look to the engineers to provide desirable atmospheric conditions in rooms occupied by human beings, an attainment that will most nearly reach perfection in ventilation as it is now conceived.

Monkey Glands Before Congress—The appendix of that erudite journal, the *Congressional Record* for January 29, 1927, has some of the aspects of a medical magazine, for it contains a 10-page article entitled "Rejuvenation of the Bodily and Sexual Powers of Both Men and Women by the Voronoff (Monkey Glands) and Steinach Methods—A Ray of Hope and a Note of Warning." This scientific extension of remarks is attributed to Representative Kindred of New York, one of the few Congressional physicians. Just how this material contributes to the legislative efficiency of Congress is a question which perhaps only its author can answer. It is a good example of the kind of thing, that costs the government money without apparently contributing in any way to its welfare. J. A. T.

EDITORIAL SECTION

Expressions of opinion and statements of supposed facts are published on authority of the writer under whose name they appear, and are not to be regarded as expressing the views of the American Public Health Association, unless such statements or opinions have been adopted by vote of the Association.

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A.C.H.A. RETIRES FROM SURVEY FIELD

AT THE regular meeting of the Executive Committee of the American Child Health Association, January 28, 1927, it was voted:

> "That the time has arrived to turn over to the American Public Health Association all future survey and follow-up work relating to health activities of municipalities, this Association acting only in a consulting and advisory capacity, excepting in cases of special requests or emergencies in which child health activities or projects have unusual significance."

Appreciative acknowledgment is made by the JOURNAL for this expression of confidence in the ability of the American Public Health Association to carry on the splendid work the American Child Health Association has done in the smaller cities of the United States. Three years ago the American Public Health Association welcomed the American Child Health Association as a valiant ally in the campaign it had been waging to improve municipal health department practice. It was then agreed to divide the labors, the American Public Health Association primarily interesting itself in the larger cities and the American Child Health Association in the smaller cities. The excellent survey of these cities which was made by the American Child Health Association in 1924 gave the first thorough test to the *Appraisal Form for City Health Work* which the two Associations had jointly developed in consultation with a number of city health officers.

It will be accepted by all who have observed the process of community diagnosis and the results of the exact information obtained, that a new spirit of rivalry in well-doing has been aroused among the official and volunteer health agencies of our cities. Renewed courage has been given to health officers to prepare their evidence and demand adequate appropriations for those indispensable functions, concerning the importance of which the *Appraisal Form* gives such exact expression.

A general raising of the level of performance, and greater uniformity in standards and proportions in the several functions of city health departments, have been observed as the practice of self appraisal has been taken up by the health officers in one state after another.

The development of technic grows apace with increased application in practice. By the time this issue reaches the hands of our Fellows, members and subscribers,

the tentative form for the experimental appraisal of rural health work will be available in print for distribution. Within the year there will be a form for state health practice offered for the consideration of the state health officers.

Each community is as worthy of individual analysis and treatment as is the sick or well patient in the hands of a private practitioner, and the American Public Health Association is filling a well recognized need in offering a professional service to the community, as a socio-biological unit.

The larger and medium sized cities have come to us in considerable numbers as clients, and now through the gracious action of the American Child Health Association, we may expect to be called upon for similar analytical and constructive professional advice in the field of sanitation and preventive medicine, by the smaller cities as well.

In extending our activities to include the smaller cities we shall be greatly aided by the splendid pioneering of the American Child Health Association in these communities. We shall miss them as wise and friendly collaborators.

CARBON MONOXIDE AND OZONE

THE DANGER of carbon monoxide poisoning is too well known to require comment or argument. Most cases of poisoning occur during the winter months for reasons which are obvious. The internal combustion engine which is so widely in use is one of the great sources of carbon monoxide and carbon monoxide poisoning. It is often desirable to run a gas engine during the winter months indoors, but this is always dangerous in the absence of provisions for carrying off waste gases.

Ozone has been proposed as a remedy, since theoretically it converts poisonous carbon monoxide into the comparatively non-poisonous carbon dioxide. Ozone generators have been installed in commercial garages, service stations, and other places where carbon monoxide is a hazard, and both proprietors and employes speak highly of them, saying that they suffer less from headache and feel more energy. It is also claimed that the smoky haze is lessened by the ozone machine.

In a matter of such importance one cannot depend upon opinion, and the question has been carefully investigated by the Bureau of Industrial Hygiene of New York.[1]

Experiments were conducted in a specially prepared chamber with tubes for withdrawing samples of air and introducing carbon monoxide, which was mixed with the atmosphere by means of an 18-inch circulating fan. The ozonator employed was known to produce enough ozone to change the entire amount of carbon monoxide in the chamber within three minutes, yet samples drawn over a period of 80 minutes following the stopping of the machine all showed definite amounts of the poisonous gas, the actual concentration decreasing on account of diffusion from the gas chamber at the same rate as before the ozone machine was started.

It is pointed out that these results agree with those obtained by Franklin, who showed that the reaction between ozone and carbon monoxide is very slow at room temperature, a period of more than three days being required for its completion.

The effects of the ozonator were further tested in service stations, where all tests showed appreciable amounts of carbon monoxide, and some as high as 3 or 4

parts per 10,000. It is further pointed out that even though the reaction was prompt, four ozonators would be required to handle the carbon monoxide generated by each motor. It must be remembered also that ozone is a poisonous gas producing death when in the proportion of 1 part to 240 of air. Mr. Salls, who gives this history, concludes that the only safe method is ventilation following the rule of the Labor Law of New York State: "Every workroom in which carbon monoxide is emitted or created in or in connection with any process of manufacture shall be provided with such ventilation that the carbon monoxide shall not exceed one-half part in ten thousand volumes of air in any occupied part of such workroom."

1. *Ind. Hyg. Bull.*, New York State Department of Labor, Jan., 1927.

AGAIN THE SPAHLINGER TREATMENT

THE SPAHLINGER treatment for tuberculosis has again broken into print in the United States. In some foreign countries the interest has never entirely died. In England it has been the subject of fairly frequent inquiries in Parliament. The Red Cross voted large sums for a fair trial of it, and a British Trust[1] was formed to raise 100,000 pounds ($500,000) in order to take over the laboratory of Spahlinger at Carouge, near Geneva, so as to insure quantity production, and relieve Spahlinger and his colleagues from financial worries. The matter was placed in the hands of the house of Sir Brunner Mond.

When last mentioned in these columns, it was stated that Spahlinger had promised some of his material to officers of our Public Health Service, and that a report would be made when the examination was completed. Though some three years have passed, the promise has remained unfulfilled, but quite recently he has assured the Director of the Hygienic Laboratory in Washington that some of his material would soon be furnished.

Recently the newspapers have carried stories very favorable to his methods, their statements being based on a report made by certain Swiss physicians. One can only hope that all that has been claimed for the treatment will be verified, but in all fairness to the public, it must be pointed out that up to the present there has not been an extensive and impartial test of his treatment.

In a recent book[2] written by one who is said to be an intimate friend and coworker of Spahlinger, the methods and underlying principles are discussed. According to the author each of the many toxins identified and isolated is injected into one or more horses, no two being injected into the same animal, and for the complete serum, not fewer than twenty-eight horses are needed. Each immunization requires approximately twelve months. At present only seven of these partial sera are available and it will require three or more years to produce the entire series. It is, therefore, evident that however correct Spahlinger's ideas may eventually prove to be, immediate relief for the suffering is not available.

It must be remembered also that this remedy has been more or less before the public since 1913. In a recent number of the *Lancet*, Dr. Nelson[3] gives the records of ten patients who were injected under the immediate supervision of Spahlinger himself in 1913 and 1914. The patients were selected by the late Dr. Latham, a widely known specialist. Some of them received as many as twenty-nine treat-

ments and a majority of them more than twenty. One patient suffered from tuberculosis of the spine and one from lupus, both of whom were alive at the end of ten years. Of the other patients with lung involvement, one had disappeared, but all the others were dead, two having succumbed after one year, and only one lived as long as 1921. It was difficult to note any improvement in them, and none showed marked improvement following treatment.

We cannot but regret that the lay press from time to time is publishing reports which usually give only the favorable side, thereby raising unwarranted hopes. While we all hope for the best, the burden of proof still rests on Mr. Spahlinger. We cannot accept his optimistic attitude until a large number of cases have been treated under competent and disinterested supervision.

1. *Lancet*, Jan. 23, 1926.
2. *Why Tuberculosis Exists. How it may be and has been Cured and Prevented.* R. Goulburn Lovell. John Bale, Sons and Danielsson, London.
3. *Lancet*, Jan. 1, 1926.

TWO MORE YEARS FOR THE SHEPPARD-TOWNER LAW

AFTER the usual acrimonious debate and the customary exhibition of delay, digression, and distortion, the United States Senate on January 13 passed with an amendment the bill for the extension of the Federal Maternity and Infancy Act. The amendment was an important one, however, for it requires that the present law shall cease to be of force and effect after June 30, 1929, thus virtually repealing it in advance. On January 19 the House concurred in this procedure.

This action by Congress is a compromise, but one which ought to be reasonably satisfactory to everyone, except a few insatiable extremists. The proponents have won out by achieving extension of federal aid to the states for another two years, while the opponents have achieved a signal victory by placing a definite time limit on what they characterize as a pernicious activity.

When the law does cease to function with the close of the fiscal year in 1929, it will have been in operation for seven years. This seems like a sufficient period in which to demonstrate to the states the value of public health efforts to promote the hygiene of maternity and infancy. By that time the stimulation from federal funds should have left such a powerful impression on the people that they will insist that the work be continued under state auspices. That the actual effect of the law has been advantageous to public health seems indubitable, regardless of the well merited contention of many political scientists that a system of federal subsidies to the states is paternal and dangerous. No detrimental effect on the alleged preciousness of states rights seems to have resulted from the working of the law so far, however, nor has there been a usurpation of the so-called sacred rights of private medical practice.

The termination of the Federal Maternity and Infancy Act in 1929 may be regarded by some with regret and by others with relief, but the majority will look upon the action of Congress as a wise solution of the problem for the present. Seven years is long enough to lay a firm foundation for this work, the real success of which is not to be measured as yet in lowered infant and maternal mortality rates, but by the attitude of the states in desiring to continue the program in its full scope after the federal support has been withdrawn. That, after all, is the test of any public health demonstration.

ASSOCIATION NEWS

NEWS OF STATE SOCIETIES

To keep the Fellows and Members of the A.P.H.A. informed of the activities of the affiliated State Societies, the JOURNAL each month will carry brief items of the varied programs. A section of Association News will be devoted to State Societies.

News of activities, proposed programs, changes in staff personnel and meetings of public health associations will be welcomed.

PENNSYLVANIA

DR. APPEL'S APPOINTMENT

THEODORE BURTON APPEL, M.D., of Lancaster, Pa., is the new Secretary of Health of the State of Pennsylvania. For many years Dr. Appel has been engaged in private practice in his home city, and has been prominent in professional activities of the state. Dr. Appel received his B.A. and M.A. degrees from Franklin and Marshall College and in 1915 this institution gave him the honorary degree of Sc.D. He was graduated from the School of Medicine, University of Pennsylvania in 1894, and served his internship in the Presbyterian Hospital, Philadelphia.

THEODORE B. APPEL, M.D.

For 14 years he was medical director of the Lancaster General Hospital. In 1910 he was elected president of the Pennsylvania Medical Society. Dr. Appel is a Fellow of the American College of Surgeons. He served as first lieutenant and assistant surgeon, Battery C, National Guard of Pennsylvania, and during the World War was promoted from captain to lieutenant-colonel of the Medical Corps, U.S.A.

FIELD SECRETARY FOR COUNTY PUBLIC HEALTH WORK

MISS EDITH STUCKEY has been appointed by the State Health Department of Pennsylvania as Field Secretary for the County Public Health Associations. Health education as it is related to organized public health work will be promoted by Miss Stuckey in communities where County Public Health Associations have been organized. She will also endeavor to create a close union between the county organizations and the State Association.

MASSACHUSETTS

MASSACHUSETTS BOARDS OF HEALTH MEET

AT the annual meeting of the Massachusetts Association of Boards of Health held in Boston, January 27, cancer control and public health legislation were discussed.

Dr. James S. Stone, president of the Massachusetts Medical Society, spoke on "The Medical Profession and the Cancer Problem." He stated that the medical profession is organized to promote the cancer campaign and is pledged to support the cancer clinics being established throughout the Commonwealth. Dr. Stone also said that the medical profession endorses the move being made by the State Department of Health to obtain from the legislature the privilege of purchasing radium for use in the treatment of cancer cases. It is believed, he said, that radium so purchased and controlled would render the greatest service and be of most value under such control.

"What the State Proposes to Do in Regard to Cancer" was the subject of the talk by Dr. George H. Bigelow, State Commissioner of Health. Dr. Bigelow said that the State Hospital for Cancer would be ready within a few weeks. He elaborated on the necessity of hospitalizing the hopeful cases, quoting statistics which show that each month's delay in the treatment of cancer nullifies the chances of recovery 16 per cent. He described the organizations being perfected, especially the coöperation of civic groups, local boards of health and the medical fraternity for the establishment of cancer clinics.

Dr. Bigelow also emphasized the importance of the passage of legislation for the control of typhoid fever carriers, engaged in the handling of foodstuffs.

Homer N. Calver, executive secretary, A.P.H.A., spoke on the importance of coöperation of health officials and the need of coördination in health legislation. He urged delegates to support the public health bills to be presented at this session of Congress.

Officers for 1927 elected were: *President,* John J. McGrath, Salem; *First Vice-President,* M. Victor Safford, M.D., Boston; *Second Vice-President,* J. U. Paquin, M.D., New Bedford; *Treasurer,* Francis George Curtis, M.D., Newton; *Secretary,* Stephen L. Maloney, Boston.

FALL RIVER'S COMMISSIONER OF HEALTH

E. M. MORRIS, M.D., has been appointed health commissioner of Fall River, Massachusetts, where he has been engaged in private practice. The position of health commissioner and school medical inspector have been consolidated, which will extend Dr. Morris's duties.

Dr. Morris received his A.B. degree from Brown University and his M.D. and C.M. degrees from the School of Medicine, Yale University.

WEST VIRGINIA

ACTIVITIES IN WEST VIRGINIA

IN West Virginia the State Association is working on an organization of local health groups in every county. One of the primary functions of the local health groups will be to develop and foster an educational health program which will be coördinated with the program of the State Association.

Officers of the West Virginia State Public Health Association for 1927 are:

President, David Littlejohn, M.D., Charleston; *First Vice-President,* R. H. Paden, M.D., Parkersburg; *Second Vice-President,* Alice L. Marsh, R.N., Berkeley Springs; *Secretary-Treasurer,* Kathryn Trent, R.N., Charleston; *Councilors:* W. H. McLain, Wheeling; R. H. Edmondson, Morgantown; Gertrude Eckhardt, R.N., Parkersburg; David B. Lepper, Bluefield; Helen Bond, R.N., Charleston; P. B. Wingfield, M.D., Logan. W. T. Henshaw, M.D., Charleston, is the representative to the A.P.H.A.

MICHIGAN

DR. KIEFER, MICHIGAN HEALTH OFFICER

GUY L. KIEFER, M.D., Fellow A.P.H.A., and health commissioner of Detroit from 1901 to 1913, has been appointed Commissioner of Health for the State of Michigan. Dr. Kiefer is well known among public health administrators. While he was health commissioner of Detroit, Dr. Kiefer instituted a system of medical school service, organized a nursing division and established prenatal and child welfare clinics. It was during his administration that the city milk supply was placed on a high standard and modern methods for the control of contagious diseases were inaugurated. About 50 per cent of the cases of diphtheria and scarlet fever in Detroit are now hospitalized in the Herman Kiefer Hospital, which was named for Dr. Kiefer's father, and built while he was city health commissioner.

GUY L. KIEFER, M.D.

Dr. Kiefer was appointed a member of the State Board of Health in 1916, and with the reorganization of that department in 1920 he was made President of the Advisory Council of the State Health Department, in which capacity he has served until his recent appointment. In 1913 he was chairman of the Section on Preventive Medicine of the American Medical Association, and in 1924 served as vice-chairman of the Section on Public Health Administration of the American Public Health Association. He served a term as president of the Michigan State Medical Society, and has also been president of the Wayne County Medical Society. In addition to his many other responsibilities he has been president of the Michigan Public Health Association, one of the first state health societies to become affiliated with the American Public Health Association. Since 1913 he has been Professor of Preventive Medicine and Public Health in the Detroit College of Medicine, and since 1920 has been Medical Director of the Michigan State Telephone Company.

TEXAS

TEXAS HAS NEW HEALTH OFFICER

J. C. ANDERSON, M.D., of Plainview, Texas, is the appointee of Governor Dan Moody as State Health Officer to succeed Dr. H. O. Sappington. Dr. Anderson is a native of Arkansas but came to Texas in his early manhood. Upon his graduation from the Missouri Medical College he engaged in private practice in Granger, Texas, until 1910 when he moved to Plainview.

J. C. ANDERSON, M.D.

For several years Dr. Anderson has been health officer of Hale County and has been an active counsellor of the Texas State Medical Association. He has been named as a member of the Advisory Council of the Texas Association of Sanitarians. Dr. Anderson has traveled extensively in the United States and Europe to study hospital clinics. In 1925 he visited the British Isles and France to gain insight into the administration of public health work in those countries.

TEXAS ASSOCIATION OF SANITARIANS

OFFICERS of the Texas Association of Sanitarians for this year were elected October, 1926. They are:

President, L. H. Martin, M.D., Ft. Worth; *First Vice-President*, Clyde C. Hays, Waco; *Second Vice-President*, C. M. Adams, Texarkana; *Third Vice-President*, E. W. Steel, College Station; *Fourth Vice-President*, Bud A. Randolph, Houston; *Secretary*, E. G. Eggert, Austin.

Advisory Council: C. N. Avery, Austin; Holman Taylor, M.D., Ft. Worth; H. O. Sappington, M.D., Austin; H. W. Van Hovenberg, Texarkana; Mrs. Margaret Conger, Waco; V. M. Ehlers, Austin; C. N. Rosser, M.D., Dallas; Richard P. Hall, Houston; A. H. Flickwir, M.D., Houston; L. O. Bernhagen, Beaumont; A. H. Speer, M.D., Corpus Christi; W. A. King, M.D., San Antonio; J. C. Anderson, M.D., Austin; Homer N. Calver, New York City.

Dr. A. H. Flickwir has been reëlected representative to the Governing Council of the A.P.H.A.

TEXAS EXPANSION PROGRAM

IN the Proceedings of the Annual Meeting of the Texas Association of Sanitarians and the Fourth Texas Short School for Sanitarians held at Fort Worth, October 27–30, just off the press, a summary of the expansion program of the Association is given.

This expansion program would provide for a full-time secretary with the initial budget of $10,000 for the first year.

Items provided for in this budget are:

a. A special committee to solicit funds and sustaining members
b. Municipal health appraisals and surveys
c. Health expositions
d. Other activities suggested by the A.P.H.A.

Negotiations are under way with several Texas cities to make municipal health appraisals and conduct health exhibits.

Dr. C. St. Clair Drake, associate field director of the Committee on Administrative Practice, A.P.H.A., and George W. Fuller, a member of the Executive Board of the A.P.H.A., were in Dallas recently conferring with members of the Texas Association on the proposed expansion program. Dr. Drake will remain in Texas several weeks to assist in organizing proposed projects.

HOUSTON NEXT

HOUSTON has been selected for the next annual meeting of the Association. Dr. Flickwir proposed a plan which was endorsed by the executive committee to hold a health exposition jointly with the annual meeting. Dr. Flickwir was made chairman of the local committee.

At its meeting in Dallas, January 28, the executive committee endorsed several measures pending for the Fortieth Texas Legislature which pertain to the raising of standards for sanitation and health protection.

NEW YORK

DEATH CLAIMS TWO NEW YORK STATE HEALTH OFFICERS

DR. WILLIAM B. SEEBER, health officer since 1903 of Milford, Otsego County, N. Y., died of heart disease, January 3.

Dr. Henry E. Zaniard, health officer of Stafford, Genesee County, for 25 years, died of apoplexy January 9 at LeRoy, N. Y.

NEED OF PUBLIC HEALTH WORKERS

IS there a need of trained personnel in Public Health to-day?

Many have stated that there was a shortage of such personnel and various estimates of the need of trained workers have been published but no list of unfilled positions has accompanied such estimates.

The American Public Health Association hopes to disclose any such latent need by compiling a list of all unfilled positions that it can discover. This list will be printed monthly in the JOURNAL. (See Page XVIII of this issue.)

Where desired, by those who have positions to fill, the identity of the position will not be disclosed. Letters from members of the Association who may be interested in applying for any of these positions will be promptly forwarded. Letters to applicants should be marked "Personal" since many of these people are now employed. No charges will be made for entering available positions on the list and those who know of unfilled positions of any kind which call for trained public health workers are urged to send descriptions of such positions to the American Public Health Association, 370 Seventh Avenue, New York City.

LIST OF NEW MEMBERS

Theodore B. Appel, M.D., Harrisburg, Pa., Secretary of Health, Commonwealth of Pennsylvania
Helen W. Atwater, B.L., Washington, D. C., Editor, Journal of Home Economics
Vaughn S. Blanchard, A.B., Detroit, Mich., Health Education, Department of Board of Education
Jane Boote, R.N., Herkimer, N. Y., County Tuberculosis Nurse
Roscoe H. Brown, M.D., Pasadena, Calif., Medical Director of Pasadena Public Schools
George Champe, Toledo, O., Sanitary Engineer
Price Cross, Dallas, Tex. (Assoc.)
Ruth Cushman, B.S., Ardmore, Pa., Director Joint Health Service
F. Burton Derby, Scranton, Pa., Director of Physical Education, Public Schools
Mary E. Donnellan, R.N., Plattsburgh, N. Y., Clinton County Health Nurse
M. C. Haecker, Waubay, S. D., Director Division of Education and Publicity, State Board of Health
Esther Jacobs, Philadelphia, Pa., Executive Secretary, Community Health Center
Electa I. Kilgore, Baltimore, Md., Junior Bacteriologist, Health Department
S. Fred Lieb, Hastings-on-Hudson, N. Y., Dairy Laboratory Work
Margaret P. MacLean, R.N., Batavia, N. Y., Infant Welfare Nurse
Eli A. Marcoux, B.S., Berlin, N. H., Health Officer and Milk Inspector
Charles H. McCloy, B.Ph., M.A., Detroit, Mich., Teacher Health Education, Detroit Teachers College
Michael A. B. B. Mutunayagan, Colombo, Ceylon, Medical Officer of Health (Assoc.)
Elizabeth Parkhurst, A.B., Albany, N. Y., Research Assistant, Division of Vital Statistics, N. Y. State Department of Health
D. B. Peck, M.D., Chicago, Ill., Vice-President Bowman Dairy Company (Assoc.)
L. M. Post, Detroit, Mich., Director of Health Education, Board of Education
F. A. Priest, M.D., Marion, Ind., Secretary, Board of Health
Erna E. Proctor, Athens, Ga., Director of Health Education Division, Athens Child Health Demonstration
G. B. Roatta, Florence, Italy (Assoc.)
Anne Simpson, B.S., M.A., Salem, Ore., Director of Health Education, Marion County Health Demonstration
Allen E. Stearn, Ph.D., Columbia, Mo., Department of Chemistry, University of Missouri
W. A. Taylor, M.A., Ph.D., Baltimore, Md., President, LaMotte Chemical Products Company
Elmer G. Thompson, M.D., Springfield, Ill., Industrial Hygiene, State of Illinois
Arthur W. Towne, B.S., A.B., Syracuse, N. Y., Secretary, Onondaga Health Association
Willard L. Wachter, Sc.D., Easton, Pa., Instructing in Biology and Eugenics, Lafayette College
A. F. Westphal, A.B., Lansing, Mich., Assistant State Superintendent, Director of Health and Physical Education, State Department of Public Instruction
R. W. Wilcox, M.D., Long Beach, Calif., Public Health Administration as related to the practice of Industrial Medicine and Surgery
Bertha O. Yenicek, R.N., St. Louis, Mo., Acting Superintendent Municipal Visiting Nurses

DECEASED MEMBERS AND FELLOWS

F. C. Fleischner, M.D., San Francisco, Calif. Elected Member 1920.
Claude F. Shronts, M.D., Momence, Ill. Elected Member 1918.
John A. Wessner, Ph.C., M.D., Chicago, Ill. Elected Member 1926.
J. W. Wright, M.D., Erie, Pa. Elected Member 1897—Fellow 1922.

LETTERS TO THE EDITOR

TO THE EDITOR:

My attention has been drawn to the article on "School Sanitation from the Standpoint of the School Administrator," which appeared in the September issue of the JOURNAL.

Without presuming to criticise the wisdom of introducing matters of administration into the discussion of a subject as scientific as ventilation, it may be suggested that a system possibly suitable in a climate where the balmy southern breezes of Alabama fan the faces of indoor school children may hardly be adapted to the needs of the North.

A review of Mr. McClure's article indicates that he takes for granted as being final certain experiments of the New York Committee on Ventilation, as favoring an "open window" system of ventilation, and therefore by implication follows the conclusions of the famous "Resolutions" adopted by the A.P.H.A. at its last session in St. Louis, and seeks to strengthen their force by trying to show that impractical mechanical systems of ventilation do not ventilate, owing either to inefficient mechanism, ignorance, neglect or interference with their normal operation. We have yet to learn, however, of any "open window" method having been made so automatic that it will successfully operate in spite of the laziness of caretakers, or want of interested supervision of teachers, or in other words is fool-proof.

But the curiously prejudiced attitude of Mr. McClure in favor of open window ventilation is seen where he gravely raises the question "as to whether or not heating and ventilation engineers are to replace eminent sanitarians and authorities?" Yet he ought to have known that the Sanitary Engineering Section is one of the oldest and most honorable in the A.P.H.A. However, it is scarcely to the credit of this section that such Resolutions could have been adopted at St. Louis without strong opposition. One is forced to wonder whether many of the members heard the Resolutions presented or, if understood, fully comprehended their import.

One may very well agree with Mr. McClure in his belief that a larger unit of school building under county organization will aid in school sanitation, but can scarcely compliment him on the quality of his logic, when he points to the apparently general failure of mechanical ventilation in the expensive installations in the schools of New York and other large cities. If Mr. McClure would criticise the political complexion of many school boards and their appointments of caretakers as engineers, he would probably succeed better in improving school sanitation than by attempting to minimize the effectiveness of mechanical heating and ventilation methods build up during the past fifty years, after much experimentation and efforts by scientists who have made the laws of physics their special field.

Fortunately, as in other fields of sanitation, scientific control is gradually following experiment and adaptation of its results in the matter of ventilation of schools and other buildings occupied by man; but there still remains room for the trying out of various methods which may prove satisfactory in different climates. Hence we can only regret that Mr. McClure did not restrict his observations to those features of the difficult problem with which we may assume he is competent to deal.

Respectfully yours,

PETER H. BRYCE, M.D.

Ottawa, Canada.
September 29, 1926.

TO THE EDITOR:

The questioning of some of our cherished public health procedure by persons of training in other professional fields should be a healthy stimulus toward improved practice. We note such questioning in an article in the October, 1926, JOURNAL by James G. Bliss entitled "The Validity of the Medical Examiner's Rating." Although the writer of this comment is entirely in sympathy with the point of view that school medical examinations have grown to large proportions with very little analysis of just what is being accomplished, the conclusions of this article can hardly be accepted at their face value. Indeed, the computations to prove that "the validity of the medical examiner's rating is unquestionably doubtful" are misleading unless careful consideration is given to just what data has been dealt with. The failure to find a correlation between his rating of the medical examination and the test of cardiac efficiency is to be expected inasmuch as all the cases examined had normal hearts.

The second conclusion suggests a misunderstanding of the function of the physician's examination inasmuch as he has no measurement basis for considering "general power and efficiency."

The third conclusion after comparing the Sargent test and the pulse rate return after exercise and also comparing the teacher's rating and the score of the physical examination is another case of correlating supposed measures that we cannot expect to be correlated.

The fourth conclusion claims that the pulse rate test and the Sargent test "are fairly reliable tests for measuring general power and efficiency apparently because there is a correlation of .46 between these two measures." We cannot understand the logic of this conclusion. It appears to us that there is need for further consideration of what is meant by "general power and efficiency."

In regard to the fifth conclusion we agree with Dr. Bliss that he has placed too much emphasis upon the medical examiner's rating but we point out that the function of the physician's school examination should be: first, to demonstrate a health examination, a purely educational process to promote a proper attitude toward periodic health examinations; and, second, to point out physical defects that need attention through home or school. As to the value of the so-called functional tests, we are in doubt, and although we still hope their value may be demonstrated by further research we do not feel that they can be accepted in lieu of the physician's examination functioning as outlined above.

Dr. Bliss may be correct in his sixth conclusion if the Sargent Test and so-called Cardiac Efficiency Tests can be used as an educational force to motivate the health habits and the needed attention to physical handicaps, but the distant relationships in the child's mind between these so-called measures and the natural interests of the child do not suggest these tests as a ready educational force. Furthermore, until we have a more satisfactory validation of these tests is there not danger of setting up false standards for the child to attain?

Now, as to the final or "inevitable conclusion" of Dr. Bliss, first, we would seek for further evidence of the validity of the so-called functional tests that we have at present, and, second, we would point out the very unusual opportunity that the physical education teacher has in promoting health habits and the correction of the physical handicaps discovered by the physician. In the child's mind these aids to health and strength should be linked up with the skills and attainments of physical activity so eagerly and naturally sought by youth. This opportunity for motivation of health education through the activities of the physical education curriculum has been very ably presented by Professor Clark Hetherington of New York University. Although it is not the only opportunity for the motivation of health habits, practices, and attitudes, it has, we believe, been altogether too little used.

In conclusion, we would emphasize that medical and public health workers should recognize that the educational measurement expert has developed a statistical technic that we should no longer neglect, but, as with all statistical procedures, we must thoroughly understand our data if we are to draw valid conclusions. We need more accurate and valid measures of the condition of the child not suffering from obvious health disorders, or, as Mr. Herbert Hoover pointed out at the American Health Congress at Atlantic City, May, 1926, we need to know more about the *normal child*.

Truly yours,

HAROLD H. MITCHELL, M.D.
Staff Associate,
School Health Study Program,
American Child Health Association,
370 Seventh Avenue, New York City.

TO THE EDITOR:

In the November issue of *Certified Milk* appeared a statement attributed to me to the effect that since the milk supply of Baltimore has been pasteurized rickets has increased 100 per cent. This statement was entirely erroneous, since I never said anything of the kind. All the experimental evidence and all the knowledge which we now possess concerning the relation of the diet to the development of rickets supports the view that there is no relation between consumption of pasteurized milk and the incidence of rickets.

The stand which I have taken is that market milk should be pasteurized. In this process almost all of the vitamin C, the antiscorbutic substance, is destroyed, but this is not an argument against pasteurization, since vitamin C can be readily introduced into the child's diet by the inclusion of fresh fruit or vegetable juices.

It is true that epidemics have been unmistakably traceable to certified milk, but one is warranted in saying that certified milk as it is now produced is as safe as human institutions are ever likely to become. I am therefore not opposed to the sale of raw, certified milk, but believe all other milk should be pasteurized.

Since I have had numerous inquiries because of the appearance of this misrepresentation of my views, I shall appreciate it if you could find a place in the JOURNAL for the publication of this letter. Your sincerely,

E. V. MCCOLLUM

Department of Chemical Hygiene,
Johns Hopkins University,
Baltimore, Md.
December 18, 1926.

TO THE EDITOR:

Through a regrettable oversight the following errors appeared in my paper, "Development of Statistics of Marriage and Divorce in New York State," which was published in the November, 1926, issue of the JOURNAL:

In the last paragraph in the second column, page 1111, giving the states in which marriage documents are filed monthly, "Vermont" should be put in place of "Utah."

In the sixth line of column 1, page 1112, "Michigan" should be put in place of "Wisconsin," and in the second paragraph of column 2, page 1112, "Michigan" should be added to the list of states having divorce statistics.

Very truly yours,

J. V. DEPORTE, PH.D.

Director, Division of Vital Statistics,
New York State Department of Health,
Albany, New York
February 10, 1927

BOOKS RECEIVED

SUBJECT MATTER IN HEALTH EDUCATION. By Ruth Strang. New York: Teachers College, 1926. 108 pp. Price, $1.50.

DIE MENSCHENTHYMUS IN GESUNDHEIT UND KRANKHEIT. Teil I: Das Normale Organ. Leipzig: Akademische Verlagsgesellschaft M.B.H., 1926. 570 pp.

HOW I CAME TO BE. The Autobiography of an Unborn Infant. By Armenouhie T. Lamson. New York: Macmillan, 1926. 179 pp. Price, $1.75.

RELUCTANTLY TOLD. Jane Hillyer. New York, Macmillan, 1926. 205 pp. Price, $2.00.

EUGENICAL STERILIZATION: 1926. Historical, Legal, and Statistical Review of Eugenical Sterilization in the United States. By Harry H. Laughlin. New Haven: American Eugenics Society, 1926. 75 pp.

VENTILATION AND HEALTH. The New Hygiene of Fresh Air. By Thomas D. Wood and Ethel M. Hendriksen. New York: Appleton, 1927. 210 pp. Price, $2.00.

SOCIAL ADJUSTMENT. By Robert Cloutman Dexter, Ph.D. New York: Knopf, 1927. 424 pp. Price, $3.50.

LES MALADIES DES PETITS ANIMAUX DOMESTIQUES ET LEUR TRAITEMENT, CHIENS, CHATS, VOLAILLES, LAPINS, ETC. By A. Dassy. Paris: Librarie Speciale Agricole, 1923. 97 pp. Price, 6 fr.

REPORT OF THE MANSFIELD AND RICHLAND COUNTY, OHIO, CHILD HEALTH DEMONSTRATION (1922–1925 inclusive). New York: American Child Health Association, 1927. 354 pp. Price, $1.00.

THE CONQUEST OF DISEASE. By Thurman B. Rice. New York: Macmillan, 1927. 357 pp. Price, $4.50.

CHILDREN OF GRIZZLY. How They Learned the Secrets of Health. By Sadye Madalene Hageman and Alfred Oswald Shedd. Yonkers: World Book Co., 1927. 176 pp. Price, $1.00.

SEWAGE TREATMENT AND DISPOSAL. A Manual for Municipal and Sanitary Engineers and Managers of Sewage Disposal Works. By G. M. Flood. London: Blackie & Son, 1926. 163 pp. Price, $2.75.

SEX EDUCATION. By Dr. Julia Kinberg-Von Sneidern and Dr. Alma Sundquist. New York: Holt, 1926. 114 pp. Price, $1.75.

A PRACTICAL GUIDE FOR TEACHING HEALTHFUL LIVING IN THE LOWER ELEMENTARY GRADES. By Donald Easton. Boston: Badger, 1926. 130 pp. Price, $1.75.

LOCAL IMMUNIZATION. By A. Besredka. Baltimore: Williams & Wilkins, 1927. 181 pp. Price, $3.50.

FUNDAMENTALS OF SCHOOL HEALTH. By James Kerr. New York: Macmillan, 1927. 859 pp. Price, $10.00.

BIOLOGICAL RELATIONS OF OPTICALLY ISOMERIC SUBSTANCES. By Arthur R. Cushny. Baltimore: Williams & Wilkins, 1926. 80 pp. Price, $2.00.

LA ROUGEOLE. Epidemiologie, Immunologie, Prophylaxie. By Robert Debre and Pierre Joannon. Paris: Masson et Cie, 1926. 288 pp.

A MANUAL OF PRELIMINARY DIETETICS. By Maude A. Perry. St. Louis: Mosby, 1926. 146 pp. Price, $1.25.

HOSPITAL HOUSEKEEPING AND SANITATION. Nora P. Hursy, R.N. St. Louis: Mosby, 1926. 155 pp. Price, $1.25.

EATING VITAMINES. New Revised Edition. By C. Houstin Goudiss. New York: Funk & Wagnalls, 1927. 129 pp. Price, $1.50.

THE DE LAMAR LECTURES. 1925–1926. Of the School of Hygiene and Public Health, Johns Hopkins University. Edited, with an Introduction by W. H. Howell. Baltimore: Williams & Wilkins, 1927. 220 pp. Price, $5.00.

PEDIATRIC NURSING. By Gladys Sellew, R.N. Philadelphia: Saunders, 1926. 456 pp. Price, $2.50.

BOOKS AND REPORTS

Appraisal Form for Rural Health Work—*New York: American Public Health Association*, 1927. 72 pp. Price, $.50.

The appearance of an *Appraisal Form for Rural Health Work* marks the beginning of a new era in the development of county health work. The *Appraisal Form* has been drafted after extensive study by a sub-Committee of the Committee on Administrative Practice of the American Public Health Association. In approaching this task the committee has clearly stood upon the ground that the needs of public health for cities are equally binding for rural populations. Automobile salesmen discovered long ago that the Ford car was as necessary to the rural dweller as to the city dweller, and the time is past when one can hopelessly remark that nursing and clinic services, pure water and vaccination are any less the prerogative of the family that lives in the country.

At first glance this *Appraisal Form* is strikingly similar to the *Appraisal Form for City Health Work*. They are identical in form and make-up; the eleven major activities are maintained with the same total scores as in the city form. Likewise the survey schedule accompanies page by page the *Appraisal Form* itself. However, there are some 25 changes in the 130 criteria employed to measure city health work, and the standards of service have been materially and quite consistently lowered, in view of the inability of rural health work to meet city standards at the present time.

The most important changes from the City Form are found in the section on Sanitation where special provisions have to be made for appraising the milk and water supplies and the arrangements for sewerage in rural areas. A significant addition to the prenatal, infant, preschool and school sections has been the inclusion of nursing conferences without the presence of physicians, in addition to conferences at which physicians are present. The vital statistics, venereal disease, tuberculosis and laboratory sections have received little or no alterations. More emphasis has been placed upon immunization and the availibility of vaccines in the section on communicable disease control. The methods of measuring public health instruction have been made much more objective.

Elaborate as the *Appraisal Form* may appear at first glance, experimental use of the form has shown it to be practical, whether for measuring the work of as small a health unit as a health officer, inspector and nurse, or for more highly developed rural health administrations. As a program of work for the county health unit its value will be very great.

The *Appraisal Form for Rural Health Work* is specifically for experimental use and will receive much study, practical application and possible revision before it is approved by the Committee on Administrative Practice.

P. H. Platt

Hygieia, or Disease and Evolution—*By Burton Peter Thom, M.D. New York: Dutton*, 1926. 107 pp. Price $1.00.

This little book is one of the well-known "Today and Tomorrow Series." The thesis of the author is that disease is an element in biologic evolution as active and potent as any recognized by Darwin himself. He recognizes that it is an abnormal and adventitious influence but believes that this objection applies with equal force to other disturbances from the outside which have exercised a profound influence on man as well as other forms of life. He gives a fairly good history of the development of bacteriology, but the main idea of the book is that the development of immunity is a good thing and has advanced the race, holding that it is a demonstration of the survival of the fittest.

In spite of a number of questionable statements the book is interesting and gives food for thought. The author, however, shows an unfamiliarity with the terminology of the subject under discussion, and makes a number of statements which are entirely untrue. For instance, botulism is called ptomaine poisoning, and is said to be due to the fact that the gastric juice is unable to digest all of the infected food, so that the "surplus poisons" are taken into the system producing the trouble! He states that tuberculosis never attacks dogs, cats

or horses, which is manifestly untrue, and that the avian tubercle bacillus is not infective for human beings or cattle, which is almost certainly untrue. Constantly he confounds vaccines with sera, and apparently does not know the difference between them, nor the types of immunity which they produce. "Anti-rabic serum" prevents and *cures* hydrophobia; "anti-typhoid serum" prevents typhoid fever!

These inaccuracies detract much from the book. The acceptance of the author's ideas, as announced by the publishers, that they will forever kill the erroneous idea that disease is necessarily man's punishment for violating nature's laws, would lead to the neglect of hygiene and preventive medicine—the worst thing that could happen to the human race.

M. P. RAVENEL

Les Entéropathies Microbiennes—*By Prof. G. Sanarelli. Paris: Masson et Cie,* 1926. 228 pp., 28 figs. Price, $.80.

Professor Sanarelli, director of the Institute of Hygiene of the University of Rome, has summarized his own researches and those of others on the seats of infection in microbial diseases of the gastrointestinal tract in this booklet. He emphasizes the view that the specific agents in so-called microbial intestinal diseases have the characteristic capacity of finding their way to, entering into the cells of, and exercising their pathogenic action on the walls of the digestive tract. They all exhibit what he designates as a microbial gastroenterotropism. This is true whatever their portal of entry, be it normal or experimental. Typhoid, paratyphoids, cholera, bacillary dysenteries, and appendicitis are to be regarded as manifesting this tropism. Attention should therefore be directed to the hygiene of the mouth and to specific vaccinations rather than to intestinal disinfection. Sanitation may therefore concern itself not only with the dejecta of patients and infected animals, but take cognizance of their tissue infections likewise.

C. A. KOFOID

Condensed Milk and Milk Powder—*By Otto F. Hunziker. (4th ed.) Published by the Author, La Grange, Ill.,* 1926. 600 pp. 153 ill. Price, $6.50.

This book presents a thorough and scientific discussion of every phase of the preparation, manufacture, distribution, and use of condensed, evaporated, and dried milks. It is the only book devoted exclusively to this important subject and it is authoritative with respect to it. There is no question that concentrated milk products, because of their safety, stability, uniformity, convenience, nutritional quality, and other advantages will have a greater and greater usefulness as time goes on. This book is, therefore, of value to anyone interested in this field. It is well printed, contains a bibliography, and has a good index. About 50 pages at the back are taken up by advertisements.

J. A. T.

The National Government and Public Health—*By James A. Tobey, LL.B. Baltimore: Johns Hopkins Press,* 1926. 423 pp. Price, $3.

For some years efforts have been made by various people to reorganize the administrative branch of our National Government. The Institute for Government Research has been responsible for the publishing of a number of volumes on administration in general, studies of administrative problems in some other countries, and a number of reports on various activities, bureaus and boards of our own government. A short time ago a self-appointed committee went to Washington and had an interview with President Coolidge with the purpose of urging "greater centralization and coördination of the public health work of the government." As a result it seemed that there was no likelihood of anything being done until a thorough investigation was made of conditions as they exist. In view of the situation this group, which called itself the "National Health Conservation Committee," requested that a study be made. This book is the rseult; and it has also been offered by the author in partial fulfilment of the requirements for the doctorate in public health of the Massachusetts Institute of Technology. It is published as one of the series of Studies in Administration put out by the Institute for Government Research.

Part I, consisting of 74 pages, is largely historical, tracing the growth of the public health movement in our government and describing the development of the powers which the Federal Government now holds in respect to it.

Part II—"Description and Analysis of Existing Federal Health Activities"—gives in detail the many activities of the government which touch public health and medicine, showing—what has been so often pointed out—that at least 40 of the administrative units of our government are concerned, directly or indirectly, with some phase of public health. In some cases it is their major activity, in others it is only a minor factor, but in at least 8, public

health is the principal or only function, while in several others it is an important duty of the bureau.

Part III gives the history of previous attempts at correlation of various health activities of the government and ends with the author's suggestions for what he considers necessary to effect the purpose in view.

Two appendices give resolutions adopted by several associations, and a number of quotations pointing out the desirability of coördination.

The book is a valuable study containing a wealth of information in accessible form. It is well arranged and the plan is well carried out. Confessedly, it has been written for a purpose. The history of the various departments, bureaus, boards, etc., with their numerous divisions is evidently taken from the publications of these various bodies and as a matter of course, everything is presented in the best possible light. As an example, on page 317, we are told that F. F. Russell developed preventive inoculation against typhoid fever with the result that the disease is now practically extinct as far as the military establishment is concerned. Not a word is said about Wright and Leishman, who preceded Russell by some 10 years. As a matter of history, telling what is going on in the government, we believe that this is in general correct, and it is useful information if for no other reason than to show the duplication and waste which has been so often pointed out. Unquestionably, many of the millions of copies of various bulletins are sent out purely for propaganda purposes, corresponding closely to the free seed distribution which for many years was such a scandal. In 1924, about seven and one-fourth million government publications were sold, while forty-eight and one-half million copies were distributed free. This gives an imperfect index of the real demand as against an artificial one.

We believe the book would have been a better study of the situation had the author paid some attention to what might be called the opposition. If the President, or any group appointed by him, decides on making changes such as those recommended, the other side of the question must be also studied. This may, however, be left to the opposition and we can be sure that it will be heard when attempts at change are made.

The book can be heartily recommended as an excellent exposition of things as they exist in our federal government. The preface shows the origin and intention of the book and there is little danger that the careful reader will be misled, even though the statements given are partisan. It is well printed on light paper, written in interesting style, and it is easy reading.

M. P. RAVENEL

Krankheiten und Hygiene der Warmen Länder—*By R. Ruge, P. Mühlens and M. Zur Verth. (2d ed.) Leipzig: Verlag von Werner Klinkhardt,* 1925. xii+491 pp., 9 col. pls., 448 figs. Price, G.M. 30 unbound; marks 32.50 bound.

This second edition of this well known treatise on tropical diseases is the joint product of three eminent specialists of the German Marine Service. Dr. Mühlens of the Hamburg Institute of Tropical Diseases treats the spirochaetoses, diseases of unknown or uncertain etiology, and collaborates with Dr. Ruge on internal medicine. The recent war advanced medical knowledge of Weil's disease, typhus, the five- and seven-day fevers, and added, from German sources, two new therapeutic agents of considerable value, namely, Bayer "205" for trypanosomiases and yatren for amebiasis.

This new edition stresses the practical phases of tropical medicine, diagnosis, prevention and therapy, and lays emphasis on the most important and widespread diseases to the exclusion of the rarer ones. It also gives considerable attention to sanitation, hygiene and public health measures, and to the relation of personal hygiene to public health. Bibliographies are excluded and references largely limited to German work. The illustrations are abundant and excellent and the typography such as to facilitate quick reference to essentials in the subject matter. The book is of great value to all who wish a compact manual of current German procedure in tropical diseases.

C. A. KOFOID

The Student Who Smokes—*By J. Rosslyn Earp, M.A. (Cantab.), M.R.C.S., L.R.C.P., Director of the Department of Hygiene, Antioch College, Yellow Springs, Ohio. Yellow Springs, Ohio: The Antioch Press Company,* 1926. 61 pp. Price $1.00.

This little book gives the account of some carefully made and well worked out studies of the effect of smoking on students. It supplements work previously done at Columbia, Clark and Wisconsin Universities, and can be commended for its fairness and thoroughness,

the only criticism being that the number of students observed should have been greater.

The conclusions are: that there is a tendency for nonsmokers to excel smokers in athletic achievement; that there is an indisputable association between smoking as a habit and inferior scholarship; and there is some evidence that the low scholarship is due to the habit. It is further shown that the sons of smoking fathers are more apt to use tobacco than others.

M. P. RAVENEL

An Introduction to Surface Chemistry—*Introduction by Professor F. G. Donnan—By Eric Keightley Rideal. New York: Macmillan,* 1926. vi+336 pp. Price, $5.50.

It is the consensus of opinion among biologists of many brands that the future investigation into the nature of protoplasm lies with the application of chemical, physical and physicochemical methodology. The several corners of biological study take on the attributes of natural science when qualitative guesses and surmises are replaced by quantitative measurements. The formal chemical study of protoplasm has contributed little to its understanding except the recognition that the energetics of living systems are of primary importance along with structural, qualitative, and quantitative analyses. Because protoplasm is not—whatever else it is—a homogeneous system, the biologist must perforce study and understand the dynamics of disperse systems; he must study the behavior of surfaces.

The appearance of a concise monograph on surface chemistry should always cause the cockles of a biologist's heart to warm. For he persists in the hope that one will some day appear that will be useful to him—especially if he is—as most biologists are—innocent of even a reading knowledge of the field. The new book by Rideal will be unusually interesting and stimulating to biologists who already have a smattering of physical chemistry; but it will scarcely serve an introductory reader. Too much is taken for granted for a beginner's happiness (and in many places, I fear, even for the chemist).

There are chapters in the book, such as the early ones on surface tension of liquids and of solutions, on surface films and on interfaces that lay the foundations for the later ones on potentials at interfaces, stability of suspensions and emulsions and on colloids that are in the biologist's fields. But there is no direct treatment of the obvious applications to biological phenomena. The treatment of the Donnan equilibrium, which is so much in the forefront in biological journals these days, is brilliant in the simplicity of its presentation. But there is no mention of the important applications which have already been made to biochemical problems. The reactions and stabilities of colloids are treated with a simplicity that is naïve. Too frequently, here as in earlier chapters, assumptions that are made early in an argument are treated as demonstrations later. It is to be anticipated that a second edition of the monograph will see the elimination of such inconsistencies, as well as errors of type and of text. Many notions that are only working hypotheses are treated as though they were thoroughly established laws. When it probably becomes necessary to replace them in a subsequent edition by the then popular notions, it is to be hoped the author will have learned the inadvisability of writing in an actively growing field of chemistry with so few *perhapses* and *it-may-bes*.

I. S. FALK

The Carrier Problem—*By K. C. Paul, M.B., B.S. Foreword by David Nabarro, M.D., F.R.C.P. (Lond.) New York: Oxford University Press,* 1926, xii+102 pp. Price, $1.75.

This booklet is a welcome addition to the rather limited literature in collected form on this subject which is of fundamental importance in most problems of preventive medicine. The subjects covered in the treatise are enteric infections, diphtheria, meningococcal, pneumococcal, and streptococcal infections, acute poliomyelitis, bacillary dysentery, cholera, and amoebiasis, with briefer notes on plague, influenza, Malta fever, epidemic encephalitis and exanthematous diseases. The author notes the dependence in most cases upon carriers for the origin of epidemics and sets forth this relation graphically in his frontispiece. He might have used Dr. Flexner's experimental study of epidemics in mice, but omits it even in his bibliography. He deplores our lack of knowledge of the mechanism of the development of the carrier state, our ignorance of the presence and numbers of carriers in the community, the expense and difficulties of finding such carriers, and the discouraging failures in attempts at treatment of the carrier state. The book is stimulating reading for all interested in preventive medicine. It calls for thinking and reserach along lines of hygienic nad sanitary (in the broadest sense) engineering in the personal and public relations of carriers. C. A. KOFOID

Pulmonary **Tuberculosis**—*Clinical and Sociological Studies. La tuberculose pulmonaire. Etudes de phtisiologie clinique et sociale. By Leon Bernard (2d ed.). Paris: Masson et Cie.* 1925. 400 pp. Price 28f.

The first edition of this book published in 1921 was essentially an editing of lectures delivered at the Laennec Hospital and at the School of Medicine in Paris before and after the war. The second edition forms a very complete revision, in fact, much more than a revision. The author aims to give the point of view generally accepted among the French medical world regarding tuberculosis. Where controversy still reigns, the personal bias determines the presentation of ideas, as frankly admitted. Leon Bernard is Professor of Hygiene at the University of Paris and Attending Physician at the Laennec Hospital. His interest has not been confined to the clinic or the laboratory, for he has been Secretary General of the International Union against Tuberculosis since the war, as well as Executive Secretary of the French National Committee against Tuberculosis.

Bernard sums up the present conception of tuberculosis thus:

1. Primary infection by the tubercle bacillus occurs in early childhood. Pulmonary phthisis of adults is but the end of a story having its beginning more or less many years before. This primary infection results exclusively from contagion. Distinction must be made between contagion in large amount, which is particularly that within the family, and contagion in small amount. The effects of the two are entirely different, progressive tuberculosis being the result of the first and occult tuberculosis the result of the second.

2. The manifestations in adult life are due to superinfections. They result either from new infection from without or from the awakening of old lesions, endogenous superinfections through mobilization of bacilli of earlier infections.

3. If the exposure of the child to primary infection continues without check, then the superinfections will come to fall upon modified soil, defined by the term allergy. This state, which results from earlier infections, manifests itself by a greater resistance to bacilli and a greater susceptibility to their poisons.

4. The condition of allergy is variable, unstable, controlled by various influences, not all of them comprehended. In association with the number of infecting bacilli it governs the evolution of the superinfections. In primary infections, on the other hand, the quantity of bacilli is alone in determining the lesion.

Under "prognosis" is a presentation and criticism of accepted ideas. Particularly interesting is Bernard's view that the skin reaction to tuberculin and blood pressure estimation are the most reliable indices of prognosis. Favorable prognosis and strength of skin-reaction go hand in hand to a degree very valuable for prognosis in adults. This does not apply to children. The blood pressure estimation is almost equally valuable. Both methods may be used to follow the progress of a case.

The chapter on tracheo-bronchial adenopathy is a frank discussion of the little that is actually known and the pitfalls which so often lead to wrong diagnosis. The conclusions are:

1. Tracheo-bronchial adenopathy occupies an important place in tuberculosis of childhood, but none in that of the adult.

2. This diagnosis is very tricky and should be made with caution: The physical signs are all open to question and the X-ray evidence is deceptive. These statements apply even more to the adult than to the child.

3. The tuberculous nature of tracheo-bronchial adenopathy in children cannot be made without a tuberculin reaction. The frequency with which such adenopathies are really due to other causes than tuberculosis has been too often forgotten.

The chapter on Tuberculosis and Maternity presents the case against induced abortion in a clear manner. It is the view of the majority of physicians in France where both religion and a low natality make abortion a serious matter.

The chapter on Artificial Pneumothorax is a recital of the author's experience with 201 cases.

There are five other chapters devoted to so-called specific treatment, climatic and hydro-mineral cures, sociological factors, prevention, and a discussion of legal measures. They must be slighted, but one point stands out particularly: Bernard and his group, particularly Debre, have had the courage of their convictions and have developed the protection of infants to a degree probably attained nowhere else. By a close coöperation with dispensaries and maternities, pregnant tuberculous mothers are given antenal and postnatal care at the Laennec Hospital and the babies are literally snatched from infection. Where possible they are sent to special baby farms where they are brought up under good conditions and away from exposure to tuberculosis. The study of these children is affording no end of valuable information as to childhood infection.

It is a pity that the limits of a review prevent the inclusion of the numerous discussions and interesting personal observations brought out in this book.

WILLARD B. SOPER

The Need for Eugenic Reform—*By Leonard Darwin. New York: Appleton,* 1926. 253 pp. Price, $4.00.

The distinguished author has written for the educated man and woman without special scientific training, as he believes that the success of the campaign in which he is interested depends finally upon this class of persons.

A wide range of subjects is covered, beginning properly with evolution, the laws of inheritance, relative influence of heredity and environment, the problems of population, and natural selection which are necessary to an understanding of the subject which is the chief object of the book.

Like many others the author is convinced that our present course is leading to racial injury. He gives careful consideration to such questions as the elimination of the unfit, the feebleminded and the habitual criminal. He believes that the right to beget children should be denied to all who are certainly mentally defective, and discusses the various methods which have been proposed to effect this objective. He recognizes the criticism which some of his recommendations will arouse, but does not consider them valid. His arguments are clear and convincing.

In view of the menace of divorce in this country, what he says on this subject is peculiarly timely. Marriage is an institution the chief end of which is to insure family life to the succeeding generation. The breaking up of the relation partakes of disaster and he is against all systems which would make divorce easy.

Birth control is discussed, like other subjects, in an essentially sane and well balanced manner. He considers it desirable in some cases, but recognizes in it a potential danger, since it will be practiced by those best fitted to produce worthwhile progeny and neglected by the unfit.

The author has evidently copied his noted father in his clear presentation of facts and his fairness in using them.

Whether or not we agree entirely with the author, or with the society of which he has for so many years been president, we must admit that the subject is one worthy of careful study, since the future happiness of the world depends so much upon the fundamental facts involved. We have seen no book on the subject which contains such a wealth of information presented in such clear and readable manner.

The volume is an excellent example of the book makers' art, clearly printed on a good quality of paper. Let no one be frightened by the title. The book is most interesting and can be easily understood by any of the class of readers for whom it has been written.

M. P. RAVENEL

The Practice of Municipal Administration—*By Lent D. Upson, Detroit Bureau of Governmental Research. New York: Century,* 1926. 588 pp. Price, $4.00.

A demand has been growing during the past twenty years for more scientific, carefully planned and efficient methods in governmental administration. This demand has been popularly expressed as a desire for "less of government in business and more business in government." It is to supply this background for opinion and to form a basis for intelligent interest and action that the author has written.

In the foreword he states: "The discussion is intended not for the professional administrator, but for the lay citizen in and out of public office, who wishes some acquaintance with the problems that perplex the professional administrator."

Each of the 31 chapters deals with a primary function of municipal administration. The ultimate objective of each function is presented, followed by a discussion of ways and means that have frequently been employed to attain this objective. The problems of each service are clearly presented and frankly discussed. The author points out the importance of developing standards of service for all municipal functions so that unit costs may be calculated and budget allotments based upon definite programs which can subsequently be checked up.

On reading the chapter dealing with health one feels that the preventive aspect of a health department program has not been so completely presented as is desirable. Health work is increasingly becoming that of health promotion, dealing largely with the education of the individual in matters of personal hygiene. One would expect to find public support for this newer and more rational aspect of health work.

The services rendered by the usually established bureaus of a health department are well stated and copious references will enable the reader to follow further any subject of special interest. The health officer and lay reader will find in this volume in clear and concise language a statement of the functions of each municipal department, together with the principal problems which have to be met. Administrators will take a broader view of their relations to the body politic after reading this book.

W. F. WALKER

HEALTH DEPARTMENT AND OTHER REPORTS

IRA V. HISCOCK

Chicago, **Illinois**—The Department of Health of the City of Chicago has just published a report of activities for the years 1923–1925. This is an attractive volume of 842 pages bound in blue cloth covers, well printed in readable type and containing many illustrations in the form of graphs, photographs, charts and tabular material. This is one of the most interesting and valuable reports of the year, and should prove of immense interest to health administrators. Many helpful suggestions may be found for others preparing annual health department reports.

The Mayor states in a foreword that "There is no nobler service than the promotion of the public health. Public health is the basis of the happiness, the security and the progress of the people." Following a well-arranged table of contents and a brief foreword by the Commissioner of Health, there appears a general organization chart of the Department of Health. This chart indicates that the activities of the department are carried on under two main sections, a medical section and a technical section, each directed by an assistant commissioner of health, in addition to the work of the Division of Surveys and the Division of Publicity. Under the medical section are organized bureaus of communicable diseases, child welfare, laboratories, and a municipal contagious disease hospital. Under the technical section are organized bureaus of sanitary engineering, food inspection, general inspection and vital statistics. The Secretary's office, the Division of Publicity, the central office, and central files, the bookkeeping and accounting division, the stenographic division, photostat division, and stock rooms constitute the intermediate division. The Department of Health has the benefit of an advisory staff, authorized by the Finance Committee of the City Council, and appointed by the Commissioner of Health. On January 13, 1926, the City Council created by ordinance a board of health consisting of 5 members appointed by the Mayor, by and with the consent of the City Council.

A classified expenditure table appearing early in the report indicates an expenditure of 61 cents per capita in 1923 by the Department of Health, while the per capita expenditures in 1924 and 1925 were 62 cents and 61 cents respectively. The Health Department appropriations and expenditures for various activities are graphically analyzed for each year. A little over 4 per cent of the total corporate expense is for Health Department activities. In addition to Health Department expenditures, it is found that 61 cents per capita were expended in 1925 for the Municipal Tuberculosis Sanitarium.

The report contains a somewhat detailed account of the activities of the various bureaus, including sections on law enforcement and principal health ordinances passed during the period. The Division of Surveys was established to provide the Commissioner of Health and his associates with statistical information relative to the prevalence of various diseases and the morbidity and mortality to be expected from them, as well as to evaluate the mass of statistical material available in the department and to assist in community health and welfare surveys in the city. Important contributions have already been made by this division.

The reports of different bureau activities are full of valuable information, and the statistical data presented are analyzed in a manner to make the report of unusual interest. Perhaps one of the most noteworthy features of the report is the excellent series of graphic illustrations which apply to various sections of the report. In addition to a detailed statement of deaths in Chicago, classified in accordance with the international list of causes, there are presented statistics by wards for each of the 3 years in question. The general mortality, gross death rates, and populations are shown for 83 years, with graphic presentations of the death rates for all important diseases and causes. The average annual death rate for the 3 years of the report was 11.4 per 1,000 persons. An infant mortality rate of 74.7 is recorded for 1925. The typhoid death rate for that year was 1.5, with a rate of 83.1 recorded for tuberculosis, all forms. The report concludes with a section entitled, "Annals of Health and Sanitation in Chicago," and a detailed index, alphabetically arranged.

United States Public Health Service—The annual report of the Surgeon General of the Public Health Service of the United States for the fiscal year 1926 contains valuable information for those interested in public health. The

report consists of 330 pages, well printed and bound in cloth covers. In several respects this report may serve for a model for those preparing annual reports. A table of contents occupying two pages indicates the scope of the report and locates the main subdivisions, while the detailed index alphabetically arranged at the end of the report serves a useful purpose. The outstanding features of the year's work and progress are indicated in the first thirteen pages of the main report. This section is followed by detailed reports of divisions. The report concludes with a list of recommendations followed by a classified financial statement for the year. Carefully prepared tables and graphs, with a few photographs, add to the value of this 55th annual report covering the 128th year of the existence of the service.

Progress is indicated in the investigative work of the service, directed toward the elucidation of the causes and indicating methods of control of diseases. Studies of child health have continued, the same group of children having been followed through several consecutive years, making possible an estimate of the effects produced by such factors as underweight, visual, dental, tonsillar, and other physical defects upon the health, progress, and welfare of the children, as well as showing the effect of correction of these defects. The service has undertaken observations on colored children as well as white children. Further studies of narcotic addiction, both clinical and laboratory, support the former contentions of the service that this evil is essentially a part of the larger problem of subnormality. Activities toward the regulation of interstate traffic in biologic products have been continued. During the past year, special interest has been directed to the standardization of products used in the prophylaxis and treatment of scarlet fever to an extent warranting their application through commercial manufacture. "The earlier results indicate a decided benefit from the use of the antitoxic serum in treatment, but a more limited usefulness for the immunizing injections."

Considerable progress has been made in the studies of the various aspects of industrial hygiene and sanitation. The studies of particular interest have included investigations of the problem of the dangers to health possibly inherent in the use of tetraethyl lead gasoline, surveys of occupational health hazards, and studies of causes of industrial absenteeism. Other investigations of disease have included nutritional diseases, Rocky Mountain spotted fever, malaria, goiter and plague. The milk investigations have been continued, and one hundred cities have adopted the tentative standard milk ordinance developed by the service as a result of these studies. At the annual conference of state and territorial health officers with the Surgeon General, this ordinance was indorsed for adoption by all the states represented as embodying a uniform procedure to be recommended to communities.

One of the most important and productive activities has been the coöperative rural health work. "The fact that 84 per cent of our rural population is as yet unprovided with adequate official local health service—the lack of which causes loss of human life and earnings estimated at approximately $1,000,000,000 each year—is sufficient evidence of the need of participation of the Public Health Service in the development of local health work." In discussing the prevalence of disease and morbidity reports, the Surgeon General calls attention to the progress in reducing the incidence of certain diseases and indicates some of the outstanding problems facing public health workers at present.

"During the last quarter of a century the death rate from typhoid fever in the death registration area of the United States has been reduced more than 80 per cent; the death rate from tuberculosis about 55 per cent; and the rate from diphtheria, 70 per cent. These are some of the records which sanitarians contemplate with pride, and from which they receive courage for future work. Other communicable diseases show creditable reductions in both case and death rates, but the official records for some diseases are not so encouraging.

"The death rates from cancer, diseases of the heart, diabetes, and other diseases are increasing, while automobile accidents, unknown a few years ago, are taking a toll of human life which is appalling. The steady increase in deaths and disablements from this cause each year is disheartening to the person who sees the suffering and loss of life as well as the saving of time in transportation and the greater freedom of movement which the automobile has brought to our people."

Newark, New Jersey—The department of health of Newark has published its forty-first annual report. Upon opening the report, one is greeted by an attractive photograph of a group of school children supporting its banner,

"St. Bridget's School, 99 Per Cent Protected Against Diphtheria." One of the first pages of the report gives the "Outstanding Evidences in 1925" (that Newark is a healthy city). This city with a population of 453,000 reported a crude death rate of 11.67, an adjusted death rate of 10.97, a birth rate of 24 per 1,000 population, and an infant mortality rate of 68.7 per 1,000 live births. It is stated that there have been no deaths from smallpox in this city since 1903. The health officer states that "It is evident that the next great step in lowering death rates in cities will depend upon the skill and care taken by men and women in applying the principles of personal hygiene to their own particular needs."

The lowest typhoid death rate ever recorded for the city, 1.1 per 100,000 population, is noteworthy. The same mortality rate was recorded for scarlet fever. A high prevalence for whooping cough was noted, resulting in a rate of 5.3 per 100,000 population, with a case fatality of a little over 1 per cent. Twenty-three of the 24 deaths which occurred were of children under 5 years of age. More than half the deaths from diphtheria during the year were among children under 5 years of age, a rate of 9.8 having been recorded. Emphasis is given to the dangers of diphtheria and whooping cough among preschool groups. The report abounds in excellent statistical tables and graphs relating to morbidity and mortality.

The activities of the Division of Sanitation included a general survey of all bath houses, together with a general inspection of a large number of factory buildings. Investigations are made of occupational diseases reported to the department, and inspections are made of theaters, dance halls, lodging houses, and many other different types of establishments. Detailed results of bacteriological milk analyses are published opposite the names of dealers. The report concludes with a classified financial statement for the year which indicates total disbursements amounting to $387,211, including the city dispensary maintenance.

County Palatine of Lancaster—The medical officer's report for the year 1925 to the county council of the County Palatine of Lancaster contains much interesting material from the standpoint of health administration and its results. Reference is made at the outset to Circular 540, prepared in 1924 by the Minister of Health and submitted to the medical officer of health. This circular intimated that the annual reports of medical officers of health for the coming year should deal comprehensively with:

(a) The measure of progress made in the area during the preceding five years in the improvement of the public health

(b) The extent and character of the changes made during that period in the public health services of the area

(c) Any further action of importance in the organization or development of public health services contemplated by the local authority or considered desirable by the medical officer of health. Suggestions of this character should stimulate the preparation of survey reports.

The area of the administrative county is stated to be 1,054,508 statute acres. The estimated population is 1,786,800. The death rate in 1925 was 12.66, while the infant mortality rate was 82 per 1,000 births. Details of the deaths in various sanitary areas of the county are tabulated, and many graphs and colored maps add interest to the report. A table showing the relative importance from the point of view of mortality of various diseases indicates that heart disease leads the list (13.7 per cent of total deaths), with cancer second and bronchitis third. A table dealing with hospitalization of communicable diseases indicates that 100 per cent of the cases of smallpox, 57.2 per cent of the cases of scarlet fever, 59.7 per cent of the cases of diphtheria, and 58 per cent of the cases of enteric fever were removed to the hospital.

Of the total births in the county area, 49.6 per cent were attended by certified midwives. Financial assistance by the county council is available to suitable women to train as midwives at recognized institutions. It is proposed to make the keeping of notes concerning ante-natal visits compulsory. Outlines of the records to be maintained are published in the report. The maternal mortality rate was 5.24 for the county in 1925.

The entire report abounds in detailed records pertaining to health practice, classified according to sanitation, housing, inspection and supervision of food, prevalence and control over infectious diseases, maternity and child welfare.

New York State—The Division of Vital Statistics of the State of New York has compiled its report for the year 1923, consisting of 324 pages of text and tabular material. Historical data, abundantly supplied, add interest to the report. A classified list of tables pre-

cedes the main report, while an alphabetical index at the end facilitates the study of special problems.

The population of New York State, estimated as of July 1, 1923, was 10,757,144. The birth rate, 21.5, was the lowest registered since the reporting of births became sufficiently complete for comparative purposes. The data concerning births and deaths are classified according to country of birth of the mother, as well as by population groups. The death rate for the year was 13.1, one-tenth of a point higher than for the previous year.

Date rates per 1,000 population:	
New York City	11.7
Rest of State	14.8
Urban, exclusive of New York City	13.5
Rural	15.8

Diseases of the heart lead the list of principal causes of death, followed by pneumonia, accidents, tuberculosis, cancer and other malignant tumors. The deaths of 16,634 infants under 1 year of age were reported in 1923. This gives an infant mortality rate of 72 per 1,000 live births. The mortality of infants under 1 month reported in the state, exclusive of New York City, represents more than half of the total number of deaths (54.7 per cent).

Deaths under one year per 1,000 living births: Places having a population of	
10,000– 25,000	86
50,000–100,000	81
100,000–250,000	79
2,500– 10,000	76
25,000– 50,000	72
Urban, exclusive of New York City	80
Rural	75
New York City	66

Deaths of mothers, per 10,000 total births, from puerperal septicemia:	
New York State	13.0
New York City	8.5
Rest of State	18.7

Deaths of mothers, per 10,000 total births, from all other puerperal causes:	
New York State	39.6
New York City	37.6
Rest of State	42.2

To quote from the report concerning this problem:

"The striking fact brought out by these diagrams is the extremely low mortality in New York City from puerperal septicemia and in rural New York from the other puerperal causes. Mortality from puerperal septicemia in the latter was also very low, being close to the death rate in New York City.

"The deaths of mothers are almost always recorded in the place of confinement and are, therefore, more truly representative of conditions in the various sections of the state than are the death rates from nonpuerperal causes. While the high urban mortality from puerperal causes other than septicemia is probably influenced by the fact that in cases where difficult labor is expected, mothers are often taken to city hospitals for expert treatment, this observation is less applicable to septicemia. In all likelihood, the more wholesome conditions of life in rural districts outweigh the lack of hospital facilities and expert obstetrical service."

Commissioner of Education, United States Department of the Interior—The interesting report of the Commissioner of Education for the year ended June 30, 1926, contains a section on physical education and school hygiene which calls attention to the fact that the past year has seen further emphasis on health as of first importance in education. It is stated that after more than a half century of agitation on the subject, health work is rapidly being introduced as an essential feature of school work. Attention is called to the fact that studies have been completed which will furnish high school principals with information as to methods of organizing and promoting work along lines of health examination and health teaching.

"It is characteristically human to begin things at the wrong end, and such has been the case with school health work, which was commenced a half century since with college students and has but recently found its way to the preschool child. The past year has been notable for the work of the parent-teacher and other associations in impressing upon parents the importance economically, as well as educationally, of preparing the child physically for his entrance upon his school career."

Reference is made to studies of the health service rendered college students and to studies in school lighting. The latter studies resulted in the issuing of bulletins on this important subject by the U. S. Public Health Service, the Eyesight Conservation Council, and the National Committee for the Prevention of Blindness.

A SELECTED PUBLIC HEALTH BIBLIOGRAPHY WITH ANNOTATIONS

RAYMOND S. PATTERSON, PH.D.

Is Cancer **Increasing?**—An editorial summarizes recent statistical studies of cancer. Newsholme points out that in England the increase has occurred only in inaccessible cancer (in which earlier diagnosis was faulty). Schereschewski's findings are questioned because the increase is not revealed in small communities where accurate statistics are available. Until these discrepancies are explained, the apparent increase in cancer remains unproven.

ANON. The Alleged Increase in Cancer. Lancet, 1:2 (Jan. 8), 1927.

The **County Health Officer**—The opportunities as well as the duties and qualifications of the county health officer are set forth in this brief note. Nothing very new.

CHANDLER, J. F. The County Health Unit—Is It Worth the Expense? J. Missouri M. A., 24:1 (Jan.), 1927.

Dental **Focal Infections**—In a group of 237 clinic patients in whom dental focal infections had been removed to stop systemic symptoms, 185 replied to a questionnaire in regard to their condition. Eighty-two per cent reported that their symptoms had been cured or relieved. The importance of removing dental foci is stressed.

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EVANS, A. C. Studies on the Etiology of Epidemic Encephalitis. Pub. Health Rep., 42:3 (Jan. 21), 1927.

Qualifications of a Sanitarian—Even though you know what they are—loyalty to the task, industry, vision, adequate training—you will find the presentation stimulating and worth while.

FLANNAGAN, R. K. Essential Qualifications of a Public Health Worker. South. M. J., 19:12 (Dec.), 1926.

Calcium in **Nutrition**—The addition of cod liver oil to diet appears to improve the assimilation of calcium in the lactating experimental animal.

HART, E. B., et al. Dietary Factors Influencing Calcium Assimilation. J. Biol. Chem., 71:2 (Jan.), 1927.

Partially **Deafened Children**—A brief paper on the extent of partial deafness among school children, and the work undertaken by some municipalities to provide proper education for the hard of hearing.

HOLT, L. D. The Hard of Hearing Child in the Public School. Pub. Health Nurse, 19:1 (Jan.), 1927.

Vitamin C in Milk—Under the conditions described in this paper, the study indicated that the vitamin C content of a cow's ration has little if any influence upon the vitamin C content of its milk, despite the opinion of others to the contrary.

HUGHES, J. S., et al. Relation Between the Vitamin C Content of a Cow's Ration and the Vitamin C Content of Its Milk. J. Biol. Chem., 71:2 (Jan.), 1927.

Dick Test Readings—A paper which considers the importance of the correct interpretation of weakly positive skin tests, which are so numerous in the older age groups.

JOHAN, BELA. What Conclusions Can Be Drawn from the Different Degrees of the Dick Skin Test Reactions? J. Immunol., 13:1 (Jan.), 1927.

A Catechism on Vaccination—Questions concerning method, reading, material, frequency, duration of immunity, differential diagnosis and types are given complete answers. This is a valuable compendium of useful information presented in usable form.

LEAKE, J. P. Questions and Answers on Smallpox and Vaccination. Pub. Health Rep., 42:4 (Jan. 28), 1927.

Morbidity in Hospital Patients—The data of the causes for admission to hospitals is analyzed by occupation, sex, and age groups. No deductions are offered; the data are presented as an example of the value of hospital statistics, which for the most part remain unanalyzed.

LEWINSKI-CORWIN, E. M. A Study of Occupation and Disease Based on Hospital Records. Nation's Health, 9:1 (Jan.), 1927.

Immunity to Implanted Tumors—A record of series of experiments yielding several interesting results, among them that the tumor cells studied act as an antigen producing a lytic antiserum.

LUMSDEN, THOMAS. On the Nature of Immunity to Implanted Malignant Tumors. Lancet, 1:3 (Jan. 15), 1927.

Etiology of Measles—A British critic reviews the research done on the etiology of measles. He believes that Degwitz's serum is of no value; that Caronia's claims for his antigen cannot be confirmed or justified; that Ferry and Fisher's conclusions in regard to the value of their serum are not justified from the evidence that they have brought forward. Only the work of Tunnicliff in his opinion deserves consideration.

McCARTNEY, J. E. Recent Work on Measles. Lancet, 1:2 (Jan. 8), 1927.

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tions will prove interesting, if not convincing, to American sanitarians.

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MOHLER, J. R. The Relation of Animal Diseases to Public Health. Nation's Health, 9:1 (Jan.), 1927.

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MOTT, G. E. Posture. U. S. Nav. M. Bull., 25:1 (Jan.), 1927.

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Common Colds—Experience with common colds in British schools, reported by a number of school medical officers, results in a diversity of opinions. The reporters agree only in the belief that colds are communicable diseases, are one of the leading causes of morbidity, and usually are brought into the schools from the outside, particularly after holidays.

RIVIERE, CLIVE, et al. Common Colds and Catarrhal Conditions. J. Royal San. Inst., 47:7 (Jan.), 1927.

Poliomyelitis Serum—This paper, reporting upon the preparation of Rosenow's poliomyelitis antistreptococcus serum and the record of positive therapeutic results from its use, is very convincing to the unitiated and confusing to those who have been told that poliomyelitis is not caused by a streptococcus.

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SMELLIE, ELIZABETH. Diet and Hygiene of Pregnancy from the Nurse's Viewpoint. Hosp. Soc. Serv., 15:1 (Jan.), 1927.

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UTTINGER, M. Nurse and Children Find Health in 4-H Club Work. Nation's Health, 9:1 (Jan.), 1927.

Spirocheticidal Effect of Arsphenamines—Laboratory experiments indicate that the sterilizing dose of the several arsphenamines is dependent upon the amount of arsenic, and is the same in each variety. This is one answer to the "which is best" questions with which health officials are sometimes confronted.

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TOPLEY, W. W. C. Quantitative Experiments in the Study of Infection and Resistance. J. State Med., 35:1 (Jan.), 1927.

KEY TO ABBREVIATIONS

Am. J. Dis. Child.—American Journal of Diseases of Children, American Medical Association, 535 N. Dearborn St., Chicago.

Child Health Bull.—Child Health Bulletin, American Child Health Association, 370 Seventh Avenue, New York.

Hosp. Soc. Serv.—Hospital Social Service, The Hospital Social Service Association of New York City, 200 Madison Ave., New York.

J. Biol. Chem.—Journal of Biological Chemistry, Rockefeller Institute for Medical Research, 66th St. and Avenue A, New York.

J. Immunol.—Journal of Immunology, Williams & Wilkins Co., Mt. Royal and Guilford Avenues, Baltimore, Md.

J. Indust. Hyg.—Journal of Industrial Hygiene and Abstract of Literature, 55 Van Dyke St., Boston, Mass.

J. Missouri M. A.—Journal of the Missouri State Medical Association, 901 Missouri Theatre Bldg., St. Louis, Mo.

J. Royal San. Inst.—Journal of the Royal Sanitary Institute, 90 Buckingham Palace Road, London, S. W. 1.

J. State Med.—Journal of State Medicine, 37 Russell Square, London, W. C. 1.

Lancet—Lancet, 423 Strand, London, W.C. (American agents, Oxford University Press, 35 W. 32d St., New York.

M. J. & Rec.—Medical Journal and Record, A. R. Elliott Publishing Co., 53 Park Place, New York.

Nation's Health—Nation's Health, Chicago.

Pub. Health Nurse—The Public Health Nurse, The National Organization for Public Health Nursing, 370 Seventh Avenue, New York.

Pub. Health Rep.—Public Health Reports, Superintendent of Documents, Government Printing Office, Washington, D. C.

South. M. J.—Southern Medical Journal, 807 Empire Bldg., Birmingham, Ala.

U. S. Nav. M. Bull.—United States Naval Medical Bulletin, Superintendent of Documents, Government Printing Office, Washington, D. C.

PUBLIC HEALTH ADMINISTRATION

HENRY F. VAUGHAN, D.P.H.

Mansfield Health Demonstration — The American Child Health Association has recently published a report of the Mansfield and Richland County Child Health Demonstration. The report is worthy of minute study on the part of all public health administrators, and though the demonstration was aimed primarily at the conservation of child life, it has materialized into the application of a general health program.

The *Appraisal Form* of the AMERICAN PUBLIC HEALTH ASSOCIATION has been used to furnish a comparison of health work carried on in the city of Mansfield in 1921 prior to the demonstration, and in 1925 after the demonstration has been functioning for four years. Out of a possible 1,000 points, Mansfield could be credited with 329 for its health work in 1921. At the end of 1925 its rate had been increased to 715 points.

In the report there is published an analysis of the detailed figures, and the interesting comment is made that in 1925 the lowest points obtained were:

". . . in sanitation and laboratory work, and in the field of control of communicable diseases, particularly venereal diseases and tuberculosis, and that the highest relative scores were obtained in the field of school hygiene and maternal and infant welfare. This agrees with the known facts. Because of local conditions is was not possible until the latter part of the demonstration period to bring about a reorganization of health department work and therefore to begin a definite move to strengthen the parts in which this work was weak. The extent and effectiveness of the protective and educational measures for individual mothers and children, which were instituted by the demonstration, is also reflected by this score. The form, therefore, very clearly brings out the strong and weak points of health work as developed during the four years of the demonstration."

It should be very gratifying to the Fellows of the AMERICAN PUBLIC HEALTH ASSOCIATION to know that the *Appraisal Form*, for which they are responsible, is meeting with such successful application in the field of health demonstration.

The Mansfield report continues to discuss the details of the *Appraisal Form* and criticises the fact that only 20 points are allowed for "Popular Health Instruction." Since Mansfield has not issued a weekly and monthly health bulletin as a matter of routine practice it has received only 13 points out of the possible 20 points. We wonder if this is not a justification of the allotment of only 20 points to this division of the *Appraisal Form*. After all, the effective educational work is administered through the division dealing with the health of the child, in prenatal work, infant welfare, preschool, and school service. There are 350 points represented in the "Health of the Child," and of this possible total which may be secured through the appraisal system, Mansfield could muster only 82 points in 1921, but had increased its score to 343 points in 1925. Thus it is seen that they lack only 7 points of a perfect score, and this is truly a splendid index of the value of health education in that city.

The report further states that "the only items of the *Appraisal Form* which can be classed as primarily and distinctly dealing with such educational measures for the general public as will widely influence habits and thought are: first, 'Popular Health Instruction' which has already been mentioned with a credit of 20 points, and 'Health Education' (for schools) with a total credit of 25 points. The fundamental importance of community health education measures is obviously far under-rated in this allowance of 45 credits as a maximum out of a total of 1,000." We wonder if the entire demonstration in Mansfield had not been largely an application of public health education! The value of health education is not reflected so much in the number of weekly and monthly health bulletins issued, but in the results which are obtained in increasing the service rendered to prenatal cases, infant welfare, preschool and school cases. We feel certain that the outcome of the Child Health Demonstration in Mansfield demonstrates justification in the present allocation of values in the *Appraisal Form*.

LABORATORY

C. C. YOUNG

THE USE OF HEXYLRESORCINOL IN THE TREATMENT OF TYPHOID CARRIERS

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THE NOTABLE success attending the employment of the drug hexylresorcinol in the treatment of pyelitis and cystitis[1, 2, 3] naturally suggested that it be tested in other chronic infections as in the typhoid carrier condition. As is well known this condition may be due to a localization of *Bacillus typhosus* either in the urinary or alimentary tract. For this reason cases for treatment were selected that represented both urinary and intestinal carriers. In this way it was anticipated that some light might be shed on the efficacy of the drug as liberated in the intestine and there acting directly upon the organisms and as excreted through the kidney and acting upon the bacteria in the urinary tract.

Two patients only were examined in this series but it is believed that the extent of time during which they were under treatment and the variety of forms in which the drug was administered can leave little doubt as to the verity of the results.

The first patient, H. L., male, white, age 46, a farm laborer, had a history of having had typhoid fever at the age of 14, in 1893. Recovery from this attack was uneventful and there was no further gastrointestinal disturbance until 1903, when he suffered from severe diarrhea lasting about 10 days. Following this attack nothing of any significance appears in the history until 1924, when he suffered a second severe attack of the same nature. At that time a specimen of stool was cultured and the typhoid bacillus detected. Subsequent examinations showed this organism practically always present and he was pronounced a typhoid carrier by the State Department of Health. Examination by us when he first came under observation in December, 1925, confirmed this diagnosis. At no time were the bacilli detected in the urine.

DOSES OF TREATMENT

Treatment with hexylresorcinol was at once instituted, the drug being given in maximum doses daily in solution in olive oil, for a period of about 6 months. During this time stool examinations were made repeatedly by plating out on Endo medium and typical cultures of *Bacillus typhosus* invariably recovered. At this point the administration of the drug was changed. It was given in enteric coated pill form, in the same dosage, for somewhat over 6 months more. The reason for the change in the mode of administration was due to the fact that it had been shown that the drug would be liberated lower in the intestine when given in this form. The effect on the organisms was nil however, and even after treatment for a year the stools yielded cultures of *Bacillus typhosus* with uniform regularity.

The second patient A. D.,* male, white, a fisherman, gave a history of having had typhoid fever 13 or 14 years previous to coming under our notice. At the time of commencing the treatment with hexylresorcinol his urine yielded cultures of *Bacillus typhosus* while the stool examinations were negative. Medication in this case was carried out through the administration of the drug in solution in olive oil in gelatin capsules, the form in which it is given in pyelitis and cystitis. The first dose was given on December 9 and the last on February 4.

* It is a pleasure to acknowledge here the coöperation of Dr. H. M. Robertson of the U.S.P.H.S. under whose observation the treatment of the patient A. D. was carried out.

Between these dates examinations of his urine were made on December 28, January 11, January 25, and on February 4, and in each instance the typhoid bacillus was recovered.

From these experiences it seems reasonable to conclude that hexylresorcinol is an ineffective drug in the treatment of the typhoid carrier condition. It is hoped that this brief report will serve to answer the question as to the use of this drug in the treatment of such infections, a question which has been addressed repeatedly to this laboratory.

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VITAL STATISTICS

LOUIS I. DUBLIN, PH.D.

Public Health in Northern Rhodesia—According to the report of the year 1924–1925, the native population was estimated to be more than 1,100,000. No figures are available to show the rates for births or deaths among natives and neither is their immigration nor emigration recorded. The European population on April 1, 1924, totaled 4,182 persons, of whom 1,919 were adult males and 1,016 adult females. During the year, 107 births and 40 deaths occurred. The Asiatic population is approximately 60 and the number of "colored" persons 150. Total immigration exclusive of natives was 438; of these 407 were British subjects, 15 Americans and 16 from other nations.

During the year 495 Europeans were admitted to hospitals; 9 of these died. Total European deaths were 40, 8 due to blackwater fever, 2 to malaria, 2 to enteric, 1 to dysentery and the remainder to various nonclimatic diseases, besides 1 from accident, 1 from suicide and 3 from premature birth. In the same period 5,887 natives were treated as in-patients and 49,575 as out-patients; among these were 368 deaths. Influenza accounted for 1,500 cases with 74 deaths. Syphilis and tropical ulceration are widely distributed. Leprosy cases numbered 2,789, an increase of 120 over the total reported in the previous year. No compulsory segregation has been attempted which necessitates stringent regulations backed by larger expenditures of money than is at present available. Yaws, prevalent on the Congo border, has responded satisfactorily to treatment. Smallpox originating in Angola appeared in the Balovale subdistrict of Barotseland spreading to neighboring subdistricts, 128 cases and 27 deaths being reported. An outbreak from Belgian Congo occurred in Kasempa and Mweru-Luapula districts but was kept under control. In the whole territory 201,366 persons were vaccinated during the year. Sleeping sickness and the existence of tsetse-fly continue as a problem of vital importance to large areas of the territory.—*Lancet*, 2:530 (Sept. 4), 1926.

Statistics for Barbados—On December 31, 1924, the estimated population of Barbados, the most easterly of the West Indian islands, was 159,499 but this estimate depends on emigration and immigration, which experience has shown to be often seriously inaccurate. The black population numbered 111,677; the white, 10,429, and the mixed, 34,216. During 1924, the birth rate was 32.9 per 1,000, and the death rate 29.5. The percentage of illegitimate births was 68.2. Up to the end of 1924, no registration of the causes of death was available, but from January 1, 1925, a Registration of Deaths Act came into force. The number of infant deaths per 1,000 births in 1924 was 298; as compared with 220 in 1920, 401 in 1921, 187 in 1922, and 371 in 1923.

Barbados enjoys natural and climatic advantages from a health standpoint such as can scarcely be found in any other tropical place. Malaria is unknown, there are no extremes of heat or cold, the soil is well drained, and the water supply very good. However, enteric fever and dysentery are common. The enteric fever cases are mild. A venereal disease clinic, established at the General Hospital in 1922, has been attended by steadily increasing numbers. The treatment of inmates of the Leper Asylum with ethyl esters of chaulmoogra oil has been continued with very hopeful results in a number of less advanced cases. Four cases were discharged as cured during the year and

several cases are awaiting the holding of medical boards to decide whether they may be discharged. Discharged cases report every 3 months for the medical officer to ascertain whether there has been a return of the trouble.—*Lancet*, 2:888 (Oct. 23), 1926.

Tuberculosis in Belfast, Ireland—While there is yet much to be done, health conditions as a whole in Belfast show improvement. Poverty and destitution due to unemployment exist, although attempts have been made to mitigate the evil.

The total number of new tuberculosis patients was 1,111, the lowest figure since the institution for tuberculosis was opened in Belfast. There were 31,915 re-attendances and in the case of 216 patients under domiciliary treatment, the disease has been either apparently cured or become quiescent. The highest tuberculosis incidence occurred between seven and seventeen years of age, school children furnishing the largest number. The necessity of personal cleanliness in the household is emphasized, for over 41 per cent of new patients were living under conditions favoring infection and had been presumably infected. In the analysis of the end-results of pregnancy, it was found that in 2,168 tuberculous mothers, 7.9 per cent miscarried, 89.3 per cent were delivered of a living child at full term, and 2.8 per cent of a dead child. Of 1,975 pregnant tuberculous women, 32.9 per cent improved, 42.3 per cent remained unaltered, 20.6 per cent were worse and 4.2 per cent died within 12 months of delivery. Hospital authorities believe that in mild forms of the disease in patients with good environment pregnancy and child-bearing have but little effect on the clinical course of tuberculosis.—*Brit. M. J.*, 2:499 (Sept. 11), 1926.

Tuberculosis in Japan—The first statistical study of the tuberculosis situation in Japan was undertaken in 1899. The tuberculosis death rate from 219 per 100,000 in 1912 to 213 in 1921 has shown no abatement in the spread of this disease. This death rate is markedly higher in cities than in rural districts. For the period 1915–1920, the average number of deaths from tuberculosis in the whole country was 231 per 100,000 inhabitants; the corresponding figure for 40 cities, each having a population exceeding 50,000 was 361. Since 1918, according to a study covering a period of several years, of 105,650 inhabitants belonging to 56 villages, 536 (5 per 100,000) were suffering from tuberculosis. It was found that during the 10 preceding years the tuberculosis death rate was 150 per 100,000 inhabitants.

Of the deaths from different varieties of tuberculosis, the figure for pulmonary tuberculosis stands highest, next in order the figure for intestinal tuberculosis. As to sex, the tuberculosis death rate among women is almost always higher than among men regardless of the form of tuberculosis or of localities. As regards age, averages for the past 10 years show that the death rate is highest among men between 20 and 25 years of age and among women between 15 and 20 years of age, followed by men between 15 and 20 years of age and women between 20 and 25 years.

Throughout the country there are about 30 private sanatoria and special hospitals for tuberculous patients and 8 public hospitals with special rooms for these patients, the latter totalling 118 beds at the end of 1923. There are also many private hospitals including altogether about 1,320 beds for tuberculous patients. The total number of beds for tuberculous patients in all these institutions is about 3,000.

One-fourth of the expendiutres for the public sanatoria is given by the National Treasury as grants-in-aid. During the fiscal year 1924, the aggregate estimate of expenditure for preventive anti-tuberculosis work undertaken by local governments was 107,172 yens, the National Treasury making grants-in-aid to the extent of one-fourth of the total amount.—Tadaski Satow, *J. Outdoor Life*, 23:609–612 (Oct.), 1926.

Tuberculosis in New Zealand—Pulmonary tuberculosis ranks high among the causes of mortality and invalidism in New Zealand. A tabulation of the deaths from this cause from 1909 through 1923 shows that this disease accounts for the death of somewhat more than 600 persons annually. However, in spite of the adverse influences of the war and the influenza epidemic there is a gratifying tendency toward a decline in the death toll of pulmonary tuberculosis.

In order to get an approximate estimate of the number of cases of this disease the basis of calculation frequently adopted is to multiply the number of notifications in a year by five on the broad assumption that the life of a consumptive patient is on the average about 5 years from the onset of the first definite

symptoms of the disease. Using this basis, there are in New Zealand some 5,600 persons of all ages and in all stages of the disease.

The aim of the New Zealand health department in regard to the treatment of phthisis is that every case shall be admitted to a sanatorium for a longer or shorter period as soon after diagnosis as possible. The weaknesses of the present system are threefold: Too many cases still remain out of the sanatorium until the disease has made considerable headway; secondly, the home contacts of the patients do not receive sufficient attention; and thirdly, agencies for the supervision and after care of patients discharged from institutions have not been sufficiently developed.

It is arranged that medical superintendents of two North Island sanatoria visit nearby towns regularly to consult with any medical practitioners who may desire their opinions on any case. In the same way the Waipaita Sanatorium Committee has arranged for its medical superintendent to visit Timaru, Ashburton, Invercargill and other towns for a similar purpose.—T. H. A. Valintine, *J. Outdoor Life*, 23:613-615 (Oct.), 1926.

Some Health Facts of India—During 1924, the total number of deaths in greater Calcutta was 30,822, resulting in a death rate of nearly 30 per 1,000. This figure was slightly higher than that of 1923 and an unsatisfactory feature was a rise in the number of deaths from tuberculosis, nearly all of which are due to the pulmonary form. This disease, in India, appears to run a very rapid course. Possibly for this reason, signs of old infection are comparatively uncommon among Indians. The death rate varies in different classes of the community. In 1924, among Mohammedans it was 3 per 1,000, among Hindoos, 2.3, and among Indian Christians, who are few in number, 3.8. The sex and age variation is far more striking. For boys between 10 and 15 years of age the death rate was only 0.45 per 1,000 and for girls 2.2, but after this age there was a remarkable rise in female mortality. From 15 to 20 years it was 6.6 and from 20 to 30 years 6.4 per 1,000 and in the fourth quinquennium of life 6 times as many women died of tuberculosis as men due to the mode of living. The purdah system together with the custom of girl marriages causes high tuberculosis death rate among women. Probably there are 10,000 cases of tuberculosis in Calcutta with hardly any precautions taken against the spread of infection.

In Bengal during the year 1924–1925 over 2,661,000 persons were vaccinated against smallpox. Primary vaccination increased by over 4 per cent while revaccinations by 115 per cent. The average number of operations performed by each vaccinator in rural and urban areas was 1,492. Some 293,000 vaccinations were done at Calcutta. Reports show that the number of infants successfully vaccinated throughout the Presidency per 1,000 population was 275 as compared with 262 in the previous year. Of about 1,112,000 infants available for vaccination, over 300,000 were dealt with and in some districts half of the number of available infants were thus protected.—*Lancet*, 2:567 (Sept. 11), 1926.

Czechoslovakia Statistics for 1925—According to statistics published by the state statistical institute immediately following the World War, the number of marriages in Czechoslovakia increased considerably. The maximum was attained in 1919. Since that time, a declining tendency has been observed each year except in 1925. The increase in marriages last year is explanied by more prosperity and greater stability in the country. The 1925 figure was 9.19 marriages per 1,000 inhabitants. The highest birth rate occurred in 1921. Since then, there has been a decline. The present birth rate of the whole country is 25.65. The number of stillbirths and illegitimate births shows a declining tendency. The death rate has shown some significant fluctuations in recent years. The lowest rate (15.01) in the after-war period occurred in 1923. An increase to 15.35 was recorded for the following year. 1925 showed a reduction (15.18).

The leading cause of death was old age (189 per 100,000). The next in order, came the other organs (21), pneumonia (147), heart disease (128), and cancer (99). The infant mortality was lowest on record, 146 deaths per 1,000 live births. The excess of births over deaths was 9.9 per 1,000 inhabitants, the lowest since 1921.—*Jour. A. M. A.*, 87:1407-1408 (Oct. 23), 1926.

PUBLIC HEALTH ENGINEERING

ARTHUR P. MILLER, C.E.

Chloramine Treatment of Water in the Field—Chloramine treatment of water from various sources used by troops is outlined. Water, avoided by troops due to tastes resulting from use of chlorine gas or from chloride of lime can be satisfactorily treated without causing complaints, by use of controlled amounts of chloramine. Raw water from River Itchen, which showed *B. coli* in 0.01 c.c. with agar count of 2,200 was successfully treated without tastes. Treatment with dichloramine at rate of 0.20 g.p.m. and 0.3–0.4 g.p.m. of monochloramine showed *B. coli* to be absent in 100 c.c.

Monochloramine was made in a sterilizing kettle in a concentration of 25 p.p.m. by the interaction of standard chlorine with ammonia carbonate solution—dichloramine in a similar concentration but using only half a tablet of ammonium carbonate.

In the field one tablet of ammonia carbonate is dissolved in 4 to 6 gallons of water in the sterilizing kettle carried on the cart. After stirring well, one measureful of chlorine water is poured into the solution and monochloramine results.—C. H. H. Harold, *J. Roy. Army Med. Corps*, 46:115 (Feb.), 1926. Abst. by R. C. Beckett.

The Taste of Chlorinated Water—Tastes in chlorinated waters are divided into 3 broad classes: (a) chlorinous, (b) iodoform and (c) indeterminate. Chlorinous taste is simply a taste of chlorine and in the laboratory can be removed by dechlorination, though experience under practical working conditions thus far is insufficient to assure the successful applicability of this method on a larger scale. The only danger of this method is "lack of boldness in pushing the treatment far enough. Boldness is indeed the best antidote to taste troubles." Permanganate does not remove a chlorinous taste but renders it more pronounced. In some ways permanganate is a double-edged sword; it has an objectionable taste *per se* and unless used with great discretion may actually augment taste troubles.

Iodoform taste arises from a host of perplexing factors; it is associated with minor doses of chlorine and seems to be produced by the action of chlorine on substances about which little is known. By filtering through a Berkefeld filter or by adding traces of phenol bodies, the water may be so modified as to produce an iodoform taste. Waters containing little oxidizible substance, notably well waters, are particularly susceptible to these tastes; hence the tastes cannot be said to be due merely to the action of chlorine on organic matters. Tastes of this character may be absent at the works or in the large mains but appear at the periphery of the distribution system.

Unlike chlorinous tastes, those classed as "iodoform" cannot be removed by dechlorination. Permanganate usually prevents their formation or removes them after their occurrence. If permanganate has been used up and water still contains free chlorine, the chlorine may act on fresh substances and produce the iodoform taste again. Chlorine in excess may also prevent or remove an iodoform taste; in this instance, dechlorination leaves no aftertaste.

The indeterminate tastes, termed variously as "earthy," "mouldy," "damp straw," "froggy" and "bricky," are very similar to those found in untreated waters. They are not so common or as objectionable as iodoform tastes. Some of them can be removed or obviated, but others are of a most intractable nature.—Alexander Houston. *Med. Off.*, 33:132 (Mar. 21), 1925. Abst. by H. W. Streeter.

The Iodoform Taste Acquired by Chlorinated Water—Tastes and ordors in chlorinated waters are (1) chlorinous and (2) as resembling iodoform. The former are due to an excess of chlorine and are detectable by usual tests. The latter or iodoform tastes can be present with no excess chlorine reaction. During a series of observations of conditions coincident with the appearance of iodoform tastes in a chlorinated water stored in open tanks near an industrial center, it was noted that the taste

appeared immediately following light rains or heavy fogs, with the wind flowing from the neighborhood of a gas plant. From these observations it is concluded: (1) that there is some constituent of the atmosphere at certain times and places, which combines with the chlorine added to the water and causes an iodoform taste; (2) that this constituent is probably of a phenoloid character, derived from gas works and from imperfectly burnt coal; (3) that the reaction does not occur if the water contains a trace of free ammonia; (4) that it does not take place if the chlorinated water is not exposed to the air or if the water contains an unusual amount of organic matter, and (5) that a chlorinated water should not be exposed to the air, at least in the proximity of towns or gas works, nor afterwards be mixed with water which has been so exposed.

As a corrective treatment for the elimination of iodoform taste, Adams reports chloros (sodium hypochlorite) applied in conjunction with ammonia as the most effective.—B. A. Adams, *Med. Off.*, 33:131 (Mar. 21), 1925. Abst. by H. W. Streeter.

Rate of Solution of Oxygen as a Factor in Biological Purification—This is an account of some experiments with aerofilters (artificially aerated trickling filters). The theory is advanced that the limiting factor in the rate of biological oxidation is the rate of solution of dissolved oxygen.

1. As the biological oxidation of sewage is accomplished at the expense of dissolved oxygen and as the solution of oxygen in aeration tanks and in trickling filters is exceedingly slow, it is by accelerating the rate of solution of oxygen that a method of accelerating the rate of purification is to be sought.

2. In the case of sewage from Moscow, the different methods may be evaluated in the following manner: (a) in the trickling filters there is a defective ventilation and as a result, the partial pressure of oxygen is diminished; (b) using perforated tubes for the distribution of the air, aeration tanks offer a limiting surface of contact of air and liquid; (c) in the aerofilters we have a perfect admixture of activated sludge, (biological film?) sewage and air, thus assuring both a maximum rate of solution of oxygen and of biochemical action in the process of purification.

3. The aerofilters offer a maximum of activity in the purification process but they do not permit of so wide a variation in the duration of the purification as the aeration tanks.

4. A complete discussion of the laws governing the rate of solution of oxygen in water is included. The rate is found to vary somewhat directly with the intensity of aeration (volumes of applied air per volume of liquid per hour).—N. Basiakine, *Fifth Report of the Research Commission on Sewage Treatment* (Moscow), 1:160, 1925. Abst. by E. J. Theriault.

The Viability of B. Coli and B. Aerogenes in Soil—In their first experiment, the authors found that *B. coli*, when added to soil at rate of 1 gram feces to 200 grams dry soil, diminished rapidly. An initial content of 600,000 per gram had disappeared entirely by the 122nd to 136th day. In their second experiment both *B. coli* and *B. aerogenes* were used. The aerogenes disappeared almost as rapidly as the *B. coli*.

The aerogenes culture used was isolated from feces and was probably of fecal origin so that the results obtained are probably not applicable to the behavior of *B. aerogenes* of the non-fecal type.

No mention is made of the temperature at which the soils were stored. Preliminary to use, the soil was air dried and passed through a 2 m.m. sieve. This treatment possibly affected the flora and fauna of the soil so that the data given are not applicable to normal natural conditions in soil.—C. E. Skinner and T. J. Murray, *J. Infect. Dis.*, 38:37 (Jan.), 1926. Abst. by C. T. Butterfield.

Odors Are Judged by Their Wave-lengths—The original article is by A. C. Hooper in *Perfumery and Essential Oil Record*. It is an endeavor to put odor travel on the same scientific basis as the travel of light and sound. Mr. Hooper states, "The elements which yield odorous compounds belong almost exclusively to the fifth, sixth, and seventh groups of the periodic classification. Chemically, these substances are elements of variable valency. Their unsatisfied linkages set up a movement of valency-electrons which set in motion waves many hundred times shorter than light waves and with a frequency many times as great, which the nerves of smell recognize as odor." Mr. Hooper suggests that it ought to be possible to heterodyne these waves in such a way as to bring them within the range of the spectroscope "thus providing a method of eliminating the 'personal' element from the investigation of odors and possibly leading to the detection of many odors which come outside the range of

human power to smell." It is the vibratory action at a "double linkage" which Mr. Hooper calls the fundamental cause of odor.—*Nation's Health*, 8:113 (Feb. 15), 1926. Abst. by C. G. Gillespie.

Effect of Pasteurization on Infectivity of Milk of Tuberculous Cows.—The author, after a brief résumé of work and published results of several scientists concerning the thermal death point of bovine tuberculosis, gives data as to the effectiveness of a pasteurizing temperature of 145° F., or 62.5° C., held for 30 minutes.

The experiments, all of which were conducted on guinea pigs, not only included the use of pure virulent cultures of tuberculosis organisms as used in former investigations, but also with milk infected with ground up caseous tuberculosis glands and with naturally infected milk.

Post-mortem examinations on the control animals inoculated with unheated milk gave positive results. Out of a total of 53 guinea pigs inoculated with the three types of infected milk after it had been heated to 62.5° C., 6 animals died as a result of sepsis or from infection of the butter acid fast type of organism. Of the remaining animals, 46 were negative.

These experiments do not pretend to determine the thermal death point of tuberculosis organisms, but the author concludes that pasteurization carried out under the above mentioned conditions insures milk that is free from tuberculosis infection.—R. G. White and M. B. Glasg, *Lancet*, 210:222 (Jan. 30), 1926. Abst. by P. E. LeFevre.

Prevention of Stream Pollution Profitable—This short article points out that in Michigan the prevention of stream pollution is a profitable procedure. The elimination of the polluting matter is being accomplished at not only a gain in public health and a saving to aquatic life, but at an eventual profit to those concerns that have been causing the pollution. Several examples are pointed out, as for instance, the tanneries which have taken steps to recover hair and fertilizer that have been going into the rivers for years. The hair is recovered and sold for $75.00 a bale, while the fertilizer is in great demand. A paper mill in the past dumped its waste water, pulp and acid into a southern Michigan river but after waste treatment research it is now able to recover products valued at $5,000 per year.—*Domestic Engineering*, 114: 66 (Mar. 13), 1926.

Housing Methods and Death Rate Variations Correlate—In this short article, the results of a study by Dr. A. K. Chalmers to determine the probable effects on the health of the community produced by living in tenements as compared to cottages, are analyzed. The comparison is made between England and Scotland, the general practice of the people of England, in the past having been to live in cottages, and that of the people of Scotland, to live in tenements.

According to Dr. Chalmers, dwellers of tenements in Scotland show a much higher death rate, particularly from communicable diseases, than people living in cottages in England; in fact, Scotland shows a higher death rate for each sex at all ages. A table shows comparative death rates between Scotland and England, and a specific comparison is made between Manchester, a "city of cottages," and Glasgow, for the years between 1914–1922.

Incidentally, England is said to be attempting to relieve its housing shortage by building tenements and Scotland by building cottages, in each case, the method of housing about which the nation knows least.—*Nation's Health*, 8: 425 (June 15), 1926. Abst. by A. L. Dopmeyer.

Recent Research on Sewage Disposal—The work of the Experimental Station of the Department of Health of Ontario is reviewed and discussed in relation to the advance of sewage disposal in the province. The investigations carried out have included studies on the aerobic and anaerobic digestion of organic matter, diffused aeration and spiral flow, activated sludge treatment, and the digestion of activated sludge. The application of the principles evolved in these investigations in the design of activated sludge plants in Guelph, Brampton, Woodstock, Kitchener, London and York Township is outlined and discussed.

In the digestion process studied at the station, the sludge occupies but a portion of the total volume of the tank with at least 3 ft. of supernatant liquor above, and experiments have recently been carried out to determine if a single tank could be made to serve the combined function of a digestion chamber and a storm flow tank. This principle has been incorporated in the plants at Kitchener, London and York Township. The results at the former works have paralleled the successful experiments carried out at the Experimental Station, but data are not yet available from the plants at London and York Township. Other phases

of the subject which have been investigated are the influence of the iron content of activated sludge on the purification process, the fertilizing value of activated sludge, the value of various coagulants in preparing sludge for dewatering, the rate of solution and the depletion of dissolved oxygen in the activated sludge process, and the value of the direct oxidation process.—F. A. Dallyn and A. V. DeLaporte, *Canad. Eng.*, 50:193 (Feb. 2), 1926; 50:213 (Feb. 9), 1926. Abst. by R. E. Thompson.

Excreta Disposal in the Tropics Preventing Fly Dissemination—The writer describes in detail a type of pit for burying excreta in tropical countries such as Seccondee, Gold Coast, Africa, which does away with fly breeding from the excreta, and produces practically no odor or other nuisance. Pails are used for collecting the excreta in privies, and their contents are disposed of in these pits which are 18′ to 20′ long, 3½′ to 4′ wide, and 10′ to 12′ deep, depending on soil and other conditions.

The pit is sealed by placing over it bush timber joints covered with plain leaves and beaten earth called "swish," which is then tarred or treated with heavy oil. A hole is left at one end for the trap and the filling orifice is placed at the other end, and not less than 6′ to 10′ from the trap. The whole pit is protected by a thatch or palm-leaf roof and sides supported on bush timber. The area protected extends some 2′ to 3′ all around the pit.

The trap consists of a copper gauze cone fashioned like a lamp shade, placed inside of a box, the top of which is covered with copper gauze. The bottom of the box has a hole in it the size of the hole in the pit, and the base of the copper gauze cone is placed over this hole, all the fittings being closely fastened to prevent escape of flies.

This trapped pit is based upon the principles that flies breed from deep pits in which excrement is deposited, and from deep pit latrines; and that such newly-developed flies make directly for the nearest point of light to get out and obtain food. This method of excreta disposal was used because neither water carriage of sewage, nor incineration, was possible.

Traps of the type described have caught 250,000 flies and over in 5 to 6 days, assuming that there are 10,000 flies to a pint. Four species of fly were identified; Lucilia Caesar (green bottle); Calliphora vomitoria; M. domestica; and Sarcophage.—Major A. L. Otway, *J. Roy. Army Med. Corps*, 46:14 (Jan.), 1926. Abst. by I. W. Mendelsohn.

Apparatus for Activated-Sludge Tests at Essen, Germany—Raw sewage is admitted through a water seal from a glass container to a rectangular glass receptacle (a fish aquarium was used holding approximately 0.5 cu.m.). Baffles and air pipe were so arranged as to produce spiral flow according to the Hurd Principle. The tank was divided into settling and aerating compartments with holding capacities of about 1 to 6 ratio. For air diffusion, a chamois tube with an internal diameter of 2 cm. was used. In the upper part of the settling chamber there is a lead overflow pipe for the effluent.

The raw sewage flowed constantly into the aeration chamber at the same rate as the effluent was removed, the rate being regulated by a pinch cock on the outlet of the supply flask. It is stated that the apparatus has been used for many tests with activated sludge and has produced excellent results.

Abstractor's Note: It appears that a closed bottle supplying the raw sewage, water sealed by the sewage in the aerating compartment with a pinch cock on the outlet pipe of the settling compartment would be a more automatic arrangement.—Dr. F. Sierp, *Eng. News-Rec.*, 97:505 (Sept. 23), 1926. Abst. by G. H. Hazlehurst.

INDUSTRIAL HYGIENE

EMERY R. HAYHURST,* M.D., AND LEONARD GREENBURG, PH.D.

Masks and Respirators for Protection Against Dusts and Fumes—In this valuable contribution the authors describe a series of studies on the efficiency of four types of masks and respirators (the filter of the U. S. Army model 1919 gas mask, the Burrell mask, an experimental cotton mask and four modifications of the pig snout respirator). The test media were tobacco smoke, silica dust and zinc oxide fume.

When tested against tobacco smoke the pig snout respirator showed efficiencies varying from 3 to 53 per cent, depending on the filtering medium. The experimental cotton filter varied in efficiency from 22 to 31 per cent. The Burrell mask developed an efficiency of 82 to 88 per cent, while the army type filter disclosed an efficiency of over 97 per cent. When tested against silica dust both the Burrell and the army mask developed over 97 per cent efficiency. The experimental cotton mask averaged 70 per cent efficiency and the pig snout type varied from 49 per cent to over 97 per cent efficiency.

The effect of plugging all of the masks with zinc oxide fume was to increase the resistance to flow and also the filtering efficiency.

Interesting discussions are presented on the effect of leakage on the efficiency of masks and of the subject of resistance to breathing and filtering area.—J. B. Barreto, P. Drinker, J. L. Finn, and R. M. Thomson, *J. Ind. Hyg.*, 9, 1:26, (Jan.), 1927. Abstr. by Leonard Greenburg.

Preventive Medicine in Industry—Experience of a Western Mail Order House—This brief paper presents the results of a series of 1,350 physical examinations of applicants for positions in a mail order house where the occupation is chiefly of a light manual and clerical nature.

Sixty-four per cent of the applicants were under 20 years of age and 92 per cent were under 30 years of age.

Both sexes appeared to disclose approximately the same percentage of persons provisionally accepted, while of the males 5 per cent were rejected and of the females only 2 per cent were rejected.

Fifty-nine per cent of the provisionally accepted males (131) had rales in one or both lungs and 17 per cent suffered from rapid pulse. Thirty-two per cent of the provisionally accepted females (102) had thyroid enlargements; 23 per cent had rales in one or both lungs; 20 per cent disclosed increased temperature and 16 per cent rapid pulse.

Of the 40 males rejected for employment 27 per cent had valvular heart disease and 10 per cent recent otitis media. Only 12 females were rejected. Of these, 2 cases presented otitis media, valvular heart disease, high blood pressure, and cystitis.

The dispensary experience of the company is also presented, the major cause for dispensary attendance being colds.

The preventive program of the company is briefly described—C. O. Sappington, *J. Ind. Hyg.*, 9, 1:12 (Jan.), 1927. Abstr. by Leonard Greenburg.

An Improved Simple Method of Determining the Efficiency of Air Filters—The author's method of determining the efficiency of air filters consists essentially in the simultaneous sampling of the air for dust before and after the filter. This is accomplished by means of 4" square glass plates coated with Canada balsam suspended in the air duct, one before and one after the filter unit. The plates are removed after the lapse of a sufficient period of time and examined under the microscope. The dust particles are not counted, but the density of dust is determined by examining the dust slide under a microscope using an eyepiece micrometer and finding the intercepts of the dust particles on the eyepiece ruling. These are totaled and represent the count for that particular field.

In this manner fifty or one hundred fields are determined on the dusty air slide and also on the clean air slide, the results in each case being

* The editor of this Section will gladly receive contributions from members. Please address all communications to State Department of Health, Columbus, O.

averaged. The final percentage efficiency of the filter is then computed from these averages in the usual manner.—Harold G. Tufty and Eugene Mathis, *J. Am. Soc. Heat. & Vent. Eng.*, 33, 1:1 (Jan.), 1927. Abstr. by Leonard Greenburg.

Ozone in Commercial Garages Not a Substitute for Ventilation—Of late the idea appears to be spreading that ozone can change carbon monoxide into carbon dioxide directly.

In fact, some of the proprietors and employes where ozone generators have been installed are enthusiastic about them. The men say they feel better and are less subject to the carbon monoxide headache. They apparently have more energy to go through with the day's work. It is said that there is less smoky haze in those rooms where the ozone machines are running. On the other hand the cold facts of scientific evidence are decidedly against the use of ozone for this purpose.

The author of this brief paper has tested the value of this theory by filling a gas-tight chamber of 10 cu.m. capacity with a mixture of illuminating gas containing 30 per cent carbon monoxide. A 1.92 g. per minute ozonator was placed in the chamber in order to supply the test quantity of ozone. The test was started by mixing the gases up in the chamber, and the first analysis of the mixture disclosed that 13 parts per 10,000 of carbon monoxide were present.

The air samples were analyzed by the Sayers-Yant Pyrotannic Acid method at 10- to 20-minute intervals. After three samples had been withdrawn (20 minutes after the start of the experiment) the ozone generator was started and sampling was continued at 10-minute intervals thereafter.

The curve showing the concentration between carbon monoxide and time in minutes after the beginning of the experiment disclosed the fact that there appears to be no interaction between these two gases, but that the quantity of carbon monoxide in the chamber suffers a gradual decrease with time due to absorption by the chamber walls and leakage through the chamber.

The author states that even though carbon monoxide were promptly destroyed by ozone, a simple calculation shows that four ozonators would be required to destroy the carbon monoxide from each motor in operation. Then again it is known that ozone is more poisonous than carbon monoxide. The author concludes that the very beneficial effects alleged to be due to the use of the ozonators are a mystery and that they are probably psychological. The author agrees that wherever the Sayers-Yant method demonstrates carbon monoxide in the air, the following Code Rule 719 which is found in the New York Labor Law should be enforced:

"Every workroom in which carbon monoxide is emitted or created in or in connection with any process of manufacture shall be provided with such ventilation that the carbon monoxide shall not exceed one-half part in ten thousand volumes of air in any occupied part of such workroom."—C. M. Salls, *Ind. Hyg. Bull.*, N. Y. State Dept. of Labor, Jan., 1927, p. 26. Abstr. by Leonard Greenburg and E. R. Hayhurst.

Phenol Poisoning—In regard to the exsanguination-transfusion treatment of phenol poisoning the authors conclude as follows:

1. The minimal fatal dose of liquefied phenol by oral administration to dogs that have been previously fasted 24 hours and given morphine to prevent emesis is in the neighborhood of 0.3 to 0.4 c.c. per kg. body weight.

2. The withdrawal of large amounts of blood and the subsequent injection of presumably combatible citrated blood exerts a definitely unfavorable influence in poisoning by phenol. The reason for this is obscure.

3. The withdrawal of large amounts of blood and the subsequent injection of isotonic saline may be of some benefit in the treatment of phenol poisoning; if the procedure is of any value, it is slight.

4. Exsanguination-transfusion, except in so far as it may offer a portal of entry for infection or give rise to the possibility of hemorrhage, appears to be a safe procedure for unpoisoned dogs.—Haskell, Alley, and Prillaman, *J. Lab. & Clin. Med.*, XII, 4, 313-317 (Jan.), 1927. (E. R. H.)

Isopropyl Alcohol—The authors investigated the physiological properties of isopropyl alcohol on animals and at the same time determined its effects on bacteria, yeasts, and molds in comparison with ethyl alcohol. The subjects selected included rabbits, guinea pigs, dogs, cats, chickens, monkeys and humans. Conclusions:

We have thus noted in brief the observations of the effects of isopropanol on the animal economy when this substance is taken into the system at a strength which can be ingested by

the subject without apparent local discomfort.

The animal economy is capable of absorbing isopropanol in reasonable amounts without the accompaniment of toxic results.

That the ingestion of the substance produces a form of intoxication especially in the early period of the test is apparent, the violence and duration of the same depending on the species.

It is clear, however, that in most instances, barring perhaps cats, a tolerance is quickly established, and thereafter the outward appearance of the intoxication differs in no respect from that produced by ethyl alcohol. On yeast and bacteria this alcohol has a more intense action than ethyl alcohol.—Fuller and Hunter, *J. Lab. & Clin. Med.*, XII:326–349 (Jan.), 1927. (E. R. H.)

Dust-Borne Infection in Tuberculosis—The author investigated the conditions under which bacteria deposited on various materials by floating droplets would be detached as fine dust. His experiments showed that within a few hours rough materials like handkerchiefs and cloth, even with moderate handling, and to a greater extent with brushing, caused bacteria to be detached and to remain suspended in the air for a considerable time. He next found there was no noticeable decrease in the number of living tubercle bacilli within the first few hours in sputum dried in a thin layer in daylight. A marked diminution did occur on the second day. He did not obtain evidence of a decrease in virulence of the bacilli in the dried sputum. On exposing guinea pigs to the dust arising from objects which had been contaminated with sputum or droplets containing tubercle bacilli, 25 per cent of 36 guinea pigs contracted a typical pulmonary infection. He concludes that among all other methods of transmission of human tuberculosis, dust infection is the most important one.—B. Lange, Abstracted by *Arch. Path. & Lab. Med.*, Jan., 1927, p. 133, from *Ztschr. f. Hyg. u. Infectionskr.*, 106:1, 1926. (E. R. H.)

The Health of the Teacher—This is a very instructive bulletin of 64 pages including a 20-page table showing the faculty and student health supervision in teacher training institutions in the various states of the Union, also institutions having teacher health supervision. The subject in the body of the report is taken up under the headings of: Are teachers healthy? Responsibility of the training school, of the local board, of supervisors, of the community, and of the teacher. State requirements and what is done by cities, and the health in teacher training institutions are considered. "School authorities are wise in granting sick leave with pay for at least 10 days a year in order that the teacher, whose salary is never too large, may not feel it incumbent upon her to remain in school when actually unfit for duty. Springfield and Cleveland allow 10 days' sick leave with full pay; and Denver gives 5 days a year, which is cumulative over a period of 12 years. The statistics given elsewhere would seem to indicate that the privilege is not abused."—James F. Rogers, School Health Studies No. 12, *U. S. Bur. of Education*, 1926. (E. R. H.)

Sodium Thiosulphate and Calcium Salts in Prevention of the Sequelae of Illuminating Gas Poisoning—The sequelae of acute poisoning from this gas are summed up by McConnell and Spiller as follows: "Pneumonia, cardiac palpitation, localized hyperemia, gastro-intestinal disturbances, transient glycosuria, cutaneous eruptions, localized edema and gangrene. In the nervous system, paralysis of the central or peripheral type. Persistent headache is complained of and mental changes take place, often only mild hallucinations but more commonly distinct confusional insanities. Relapsing carbon monoxide poisoning is a term used to indicate the condition in those who had apparently recovered from the initial effects of the poison only to develop, after a period of fair health, a grave type of symptoms leading to death."

Carbon monoxide is the toxic agent in illuminating gas although it is the opinion of Henderson and Haggard that 25 per cent of its toxicity is due to some other substance. We have been taught that carbon monoxide combines with hemoglobin to form a strong combination which is very difficult to break up. The opinion of authorities to-day is that while it combines with the hemoglobin, the combination is easily broken up.

The author planned a series of experiments with dogs, using city illuminating gas. One set of dogs were given gas to the extent of the production of gasping, convulsions, or cessation of breathing and in no case did artificial resuscitation alone revive them. In a comparable set of experiments in which dogs were again gassed to the same degrees the following procedure was found most effective, along with artificial respiration: 5 c.c. of a 2 per cent solution of sodium thiosulphate per kilo was injected in-

travenously and at the same time 2 c.c. of a 1 per cent solution of calcium chloride per kilo was injected subcutaneously. In this series of 14 dogs all recovered although one later died on the eighteenth day.

No attempt has yet been made to demonstrate the treatment upon human subjects but the author suggests that in addition to artificial respiration the victims should be injected intravenously and as soon as possible with 5 c.c. of a 2 per cent solution of sodium thiosulphate for every 25 pounds of body weight—an individual of 150 pounds requiring 30 c.c. of the solution. The next step would be the subcutaneous injection of 5 c.c. of a 4 per cent solution of calcium lactate for each 25 pounds of body weight. After consciousness has returned, calcium should be given in a daily dose of 1 g. and continued for several days.

The author's conclusions are: (1) It is possible to produce in dogs the sequelae of carbon monoxide poisoning such as mental disturbances, general weakness, skin eruptions, etc. (2) It is possible to prevent these symptoms by the intravenous injection of sodium thiosulphate and the subcutaneous injection of calcium salts. —W. H. Zeigler, *J. Lab. & Clin. Med.*, XII, 2:109–114 (Nov.), 1926. (E. R. H.)

Industry Coöperates to Solve an Occupational Disease—In the early spring of 1926, the Ohio State Department of Health called to the attention of one of the leading manufactures of steam distilled stump turpentine, the frequency of occupational dermatitis among painters and other users of present-day turpentine and its substitutes.

The chief chemist of this company came to Columbus and, after a preliminary conference, it was agreed that the question should be investigated on a large scale with a view to finding the obnoxious ingredients and eliminating or controlling them, and preferably by the industry itself than by an official department. It was also thought that official departments throughout the country, being relieved of the expense and work consequent upon such an investigation, would freely coöperate, as, for example, by supplying information about this type of occupational disease so far as the same might come to notice.

Through the efforts of the chemist in question and others, all of the producers of steam distilled wood turpentine in the United States—22 in number—have agreed to sponsor an investigation of this kind and have selected Dr. Henry Field Smyth of the University of Pennsylvania to direct and carry on the work. Dr. Smyth has been well known in the field of industrial hygiene for years and was recently chairman of the Section on Industrial Hygiene in the American Public Health Association. He has also recently completed a survey of the health aspects of spray coating and painting for the State of Pennsylvania, and a special investigation of the same subject in Detroit, Toledo and Mansfield (Ohio) for the National Safety Council.

The completion of the arrangements for the present investigation were made at a meeting held at the Hotel Mayflower in Washington, D. C., October 15, 1926.

The Ohio State Department of Health has accumulated within the last one and one-half years over 100 cases of occupational dermatitis attributable to the substances in question. While none has been particularly serious, some cases have been extensive and the irritation or dermatitis is a very troublesome feature, often requiring workers to discontinue their work for long periods.

An advisory group to assist Dr. Smyth has been named, consisting of L. R. Thompson, U. S. Public Health Service; F. P. Veitch, U. S. Department of Agriculture; H. A. Gardner, Institute of Paint and Varnish Research; and Emery R. Hayhurst, Ohio State Department of Health.

Inasmuch as reports of this form of occupational dermatitis have been received from over 40 different employers in the State of Ohio, it is considered wise to ask all who have had any experience with dermatitis in painting operations everywhere to get in touch by correspondence with Dr. Henry Field Smyth, University of Pennsylvania, Philadelphia.

The Excretion of Lead by Normal Persons—By a slight modification of the Fairhall method of analyzing for lead in the urine it was found that this phenomenon appears in normal men as a matter of almost uniform occurrence. (The authors next give a detailed description of the method for analyzing for lead in both urine and feces, with the precautions to take in regard to apparatus, materials, etc. The procedure is so much more convenient than that of the older methods which involve the evaporation of the urine that it was employed throughout the tests made.)

The subjects were workmen taken at random in one city, secured through an employment agency, 65 all told. There were farmers, common laborers, skilled workmen, sailors, chauffeurs, and clerks. Every part of the United States was represented in their former places of abode. Most of them were youths or in middle life. They were employed by the day and released at night. They were instructed as to just what was desired of them and maintained under supervision during the entire period. Each was carefully questioned as to the previous occupation for at least five years theretofore. An accompanying table shows the actual lead found in the feces and the urine, in milligrams; also the possible history of exposure to lead. In 26 such, history was negative. The authors summarize as follows:

1. In a series of sixty-five apparently normal, healthy workmen, chosen at random and found to be secreting lead in the feces or urine or in both, not one was suffering from lead poisoning.

2. There are certain unknown means of exposure to lead so widespread that most persons have absorbed appreciable quantities, as evidenced by their secretion of lead.

3. There is no diagnostic value in qualitative lead determinations in the excreta of persons suspected of having lead poisoning.

4. There is at present no quantitative expression of lead secretion in man which may be said to be significant of impending or present lead poisoning.—Kehoe, Edgar, Thamann, and Sanders, *J. A. M. A.*, 87:25, 2081–84 (Dec. 18), 1926.

Some **Pharmacological Effects of Lead**—Among the many valuable papers contributed in the symposium on the treatment of cancer with lead, at the Nottingham meeting of the British Medical Association, the following is extracted from the paper by Dr. Walter J. Dilling: The effects on growth were studied in connection with frogs' spawn, tadpoles, and various embryos, also a résumé of the literature given with the conclusions that lead is much more toxic to germ cells and embryonic tissues than to mature tissues and that it affects both the spermatozoa, and even more so the ovum as well as the embryonal membranes, while it retards growth inversely proportional to the age of the animal. The effect of lead is more powerful than that of a number of other metals.

Given intravenously it promotes, in the intestines, vomiting, colic and constipation. This results from the lessening of the normal movements of the muscles of the intestines which delays the transmission of the contents and permits greater absorption of water and inspissation. The intermittent colic is due to the increased tone of the intestinal muscles when lead ions are concentrated above 1 in 90,000. Other metals tested showed that zinc, copper, thallium, beryllium and thorium all inhibit intestinal contraction followed by an increased tone similar to but less than lead.

The work of Aub and his coworkers has been verified in many respects. Concentration of lead in the liver may be as much as 1 in 20,000, while in the skeleton an average of 7 cases contained 1 in 16,000. Concentrations in excess of 1 in 90,000 cause a chronic type of muscular contraction. Upon the uterus the action is similar to that on the intestines, and this is so in all animals tested. The action seems to be directly upon the muscle itself rather than through the nervous system. There was very little evidence of increased blood pressure although lead salts do contract isolated arteries. The effect of colloidal lead injections in animals in 5 c.c. of 0.5 per cent is very transitory, but shows an increase of respiration and of pulse for a few seconds. It is this form of lead that is being used in the experimental treatment of cancer.—*Brit. M. J.*, 3437:924–27 (Nov. 20), 1926.

Lead: A Statement in Outline—The following synopsis appears to the abstractor as the most concise, accurate and complete of any recently given and is therefore stated in full:

1. *Substance:* Lead. Poisonous compounds or mixtures: (a) Nearly all compounds. (b) Alloys if molten. 2. *Dangerous Forms of Exposure:* Dust and fumes. (Rarely liquids and gases.) 3. *Mode of Entry Into Body:* Respiration and by mouth. 4. *Minimum Toxic Quantities:* 2 mgs. per day over a long period. 5. *Action Cumulative or Non-cumulative:* Cumulative. 6. *Susceptibility Variable or Non-variable:* Varies markedly in different individuals. Is greater in females, children, alcoholics, or those with chronic disease.

7. *Acute Symptoms After Brief Severe Exposure:* Abdominal pains, constipation, vomiting, collapse. 8. *Chronic Symptoms After Prolonged Mild Exposure:* Constipation, pallor, weakness, loss of weight, abdominal cramps. Paralysis of constantly used muscles; *e.g.*, wrist drop in painters. In some cases acute

convulsions and delusions. 9. *Characteristic Signs or Proof of Poisoning:* Typical symptoms plus two objective signs of absorption such as stippling of blood cells, anemia, lead line on gums and finding of lead in stools or urine.

10. *Medical Treatment:* If diagnosis is clear give atropine and magnesium sulphate. Force milk and calcium lactate. After acute symptoms have subsided, increase lead excretion by eliminating milk from diet and giving ammonium chloride, 6 grams a day, or potassium iodide. Sodium thiosulphate is said to assist elimination. Keep bowels open. If exposure is to continue, require high personal hygiene, remove from exposure to dust and force milk in diet. 11. *Preventive Methods:* Eliminate all dust and fumes by good exhaust ventilation. Cover molten metal with charcoal and avoid fumes or dust in handling dross. Minimize dust on clothes. Use wet sandpapering. Avoid dry sweeping and the use of dry lead powders. Provide adequate wash rooms and lunch rooms, and enforce high personal hygiene. Encourage hearty meal prior to work and plenty of milk during day. Require monthly physical examination. Remove from exposure those who show early signs. 12. *References:* Aub, Fairhall, Minor and Reznikoff, *Lead Poisoning*, 1926; Hamilton, *Industrial Poisons in the United States*, 1925. Kober and Hayhurst's *Industrial Health*, 1924; Hutton, *Lead Poisoning*, Ontario Board of Health, 1923.—Industrial Poisons Committee, Chemical Section, *Natl. Safety News*, Nov., 1926, p. 54.

Notice: Information Wanted Regarding Turpentine Poisoning—The International Association of Master Painters and Decorators of the United States and Canada is conducting an investigation to determine the toxic properties of various kinds of turpentine. For a long time it has been known that turpentine is capable of bringing about skin lesions and in some instances this substance has been associated with well defined systemic diseases, notably nephritis. There are some reasons to believe that the incidence of pathologic conditions attributable to turpentines is increasing, and that possibly this may be due to the newer types of turpentine in use, namely, *Steam Distilled Wood Turpentine* and *Destructively Distilled Wood Turpentine*. Prior to the introduction of these wood turpentines, the type in common use was *Gum Spirits Turpentine*.

The Association has selected Dr. Carey P. McCord, of the Industrial Health Conservancy Laboratories, Cincinnati, Ohio, as their Technical Advisor, and information, which is desired from a variety of sources, should be sent directly to Dr. McCord, 34 West Seventh Street, Cincinnati, Ohio.

Sporotrichosis, an Occupational Dermatosis—No disease of parasitic origin has a larger proportion of cases originating in occupational hazards than sporotrichosis. This is an endemic disease in the gardening industry, and things point to the barberry shrub as the probable source of the infection. There is an apparent increasing prevalence of the disease. The author reports a group of 18 cases seen during the last 5 years. Case reports are cited.

The disease strongly resembles syphilis beginning with a chancre followed by a slow development with lymphangitis, enlargements of the lymph nodes, the formation of gummas, usually multiple and varying in size from a pea to a walnut with occasional formation of abscesses and ulcers. The disease is without fever or pain and in France has resulted in many amputations as well as pulmonary and visceral disorders. In this country only 3 fatalities have thus far been recorded and a few cases of permanent disability. The duration may be for months to years. The disease is to be diagnosed from syphilis, tuberculosis, indolent pyogenic infections, blastomycosis, actinomycosis, glanders, tularemia, and other mycoses. Direct diagnosis is confirmed by cultures, complement fixation tests, agglutination tests, the intracutaneous reaction of Bloch, and animal inoculation. The sporthrix is difficult to find in smear preparations.

Potassium iodide in rapidly increasing dosage from 30 to 90 grains per day usually results in prompt involution of the lesions. Local applications of iodine may be applied to the ulcers, also the X-ray. One attack of the disease fails to produce immunity.—Harry R. Foerster (Milwaukee), *J. A. M. A.*, 87, 20:1605-09 (Nov. 13), 1926.

FOOD AND DRUGS

WALTER S. FRISBIE

Resistance of Liposoluble Vitamins to Hydrogenation—The wide use of hydrogenated oils and fats in the manufacture of margarin in France and in other countries led the authors to investigate the effect of industrial hydrogenation on the nutritive value of the fats. Other workers have shown that hydrogenation effected at low temperature does not injure the antirachitic vitamin. In view of the destructive action of heat the authors sought to determine whether the effect would be modified by the presence of hydrogen under pressure. For this purpose a model of an industrial apparatus was made, capable of withstanding 20 kg. pressure. With this apparatus two types of hydrogenated oil were prepared from a commercial cod liver oil having an iodine number of 134.39: (a) Hydrogenation for 6 hours at 180–190° gave a solid fat, melting point 53–55°, iodine number 28.69; (b) Hydrogenation for 8 hours at 120–130° gave a brown fat, disagreeable odor resembling the original oil, melting point 42–44°, iodine number 64.93. These fats were tested biologically for antirachitic power, using white rats 27 to 28 days old and 40–50 g. weight. As soon as weaned they were placed on a diet (Sherman and Pappenheimer, 84) to which was added filter paper for a diet balance. In 25 to 30 days typical rickets appeared, identified by radiographs. At this point experimental diets containing the hydrogenated oils were introduced compared with original cod liver oil and with butter. After 9 days, rickets was still accentuated in the hydrogenated oil fed rats, completely subdued by original cod liver oil, and in the case of butter much improved. The authors conclude that a satisfactory hydrogenated oil requires a relatively high temperature, 180–190° and that such oil does not keep the antirachitic properties of the original. Hydrogenated cod liver oils permit growth but are not sufficient to prevent xerophthalmia. Hydrogenation under pressure does not prevent the destructive action of the heat on the liposoluble vitamins of cod liver oil. Butter is not completely deprived of antirachitic action as ordinarily stated. Margarines with a base of hydrogenated oils are probably inferior to natural fats or oils regarded as sources of liposoluble vitamins.—L. Randoin and R. Lecoq, *Ann. des Falsifications et des Fraudes*, No. 215, Nov., 1926, p. 518.

A Suggested Bacteriological Standard for Ice Cream—The work reported in this bulletin was undertaken in an attempt to answer the question, "How many bacteria should good ice cream contain?" After reviewing the published reports of other investigators, the statement is made that all investigators have reached the conclusion that with the present methods of pasteurizing the mix, sterilizing the machinery, and with the greatly improved methods of refrigeration, it is possible to make ice cream on a large scale with a low bacterial content. Data from various published reports are presented. In several tables are presented the counts obtained by the author and his assistants from samples of ice cream manufactured under both good and bad conditions in five cities in Michigan: Lansing, East Lansing, Ann Arbor, Detroit and Flint. A total of 1,110 samples were examined. Seven hundred fifty-six samples, or 68.11 per cent, contained 100,000 or less bacteria per g.; 132 samples, or 11.91 per cent, contained between 100,000 and 500,000 bacteria per g.; and 22 samples, or 19.98 per cent, contained over 500,000. The lowest number of bacteria recorded was 1,000 per g. and the highest was 300,000,000. The ice cream examined was obtained from plants ranging in size from those making a few gallons per week to those making as high as 30,000 gallons per day. The data were collected over a period of 9 years and the samples included every kind of ice cream known to the trade. The desirability and, in fact, the actual need for a bacteriological standard is discussed. It is stated that the bacterial content of ice cream should not be greater than 100,000 per g. The number of bacteria should be recorded per gram and should be determined by using standard agar, incubated at 37° C. for 48 hours and counted. The directions for making the agar

and counts should be those contained in *Standard Methods of Milk Analysis*, published by the AMERICAN PUBLIC HEALTH ASSOCIATION, until more suitable methods for analyzing ice cream shall be proposed.—F. W. Fabian, Mich. State College Agricultural Experiment Station, *Special Bulletin No. 158*, Aug., 1926.

The Influence of Cooking upon the Nutritive Value of Foods—Cooking produces a change, in a mixed diet, so that its nutritive value is far below its caloric value. Animals fed raw food eat only one-third as much as those fed the same diet cooked; but the animals fed raw food gain in weight about twice as rapidly as do the animals fed cooked food. Cooking does not change the nutritive value of foods that are predominantly carbohydrate or fat (*e.g.*, oats or butter). The change is produced in the protein constituents. Rats nourished with raw eggs gain 140 g. in weight in 2.5 months. Rats from the same litter gain only 88 g. in 2.5 months when fed boiled eggs. The difference in all of these cases between the cooked and uncooked food is not due to a vitamin deficiency. None of the animals showed signs of avitaminosis. Animals fed cooked foods to which vitamins are added behave just like those that are not receiving extra vitamin. —E. Friedberger, *Klin. Wchnschr.*, 5:1966–7, 1926; *Chem. Abst.*, 21:259 (Jan. 20), 1927.

Iron in Nutrition—Conflicting reports of previous investigators as to the possibility of increasing iron in milk by feeding iron compounds, led the authors to conduct very careful experiments which are the basis of the present paper. A recently developed method (Elvehjem, C. A., and Hart, E. B., *J. Biol. Chem.*, 67:43, 1926, was used for the determinations of iron. The two goats used were mature lactating animals which had been fed on a basal ration one week prior to experiments. The animals were milked twice daily and the milk analyzed for iron. It was found impossible to increase the iron content of cow's milk by feeding Fe_2O_3 or the soluble salt $FeSO_4 \cdot 7H_2O$. There was no noticeable change in iron content even when the addition of iron increased the original iron content of the ration fivefold. The addition of Fe_2O_3, or Fe_2O_3 plus fresh green cabbage to the ration of a goat brought about no changes in the milk which would prevent the development of nutritional anemia when fed to young growing rabbits. Cows fed on rations of alfalfa hay and of timothy showed no difference in iron content of milk although alfalfa contained twice as much iron as timothy.—C. A. Elvehjem, R. C. Herrin and E. B. Hart, *J. Biol. Chem.*, 71:255 (Jan.), 1927.

Relation Between the Vitamin C Content of a Cow's Ration and of Its Milk—Previous workers, except the authors, have indicated that the vitamin C content of milk varies with the content of this vitamin in the feed. This paper is a report of the work undertaken by the authors in 1919 to study the influence of the vitamin content of the diet on the vitamin content of milk in dairy cows. A number of feeding rations were tried, all of which are recorded, as well as graphs showing the growth of the various animals. The results of all of these experiments indicate the vitamin C content of a cow's ration has little if any influence on the vitamin C content of the milk; in fact, at least in the case of one cow, there is evidence to indicate an ability on the part of the animal to synthesize this vitamin.—J. S. Hughes, J. B. Fitch, H. W. Cave, and W. H. Riddell, *J. Biol. Chem.*, 71:309 (Jan.), 1927.

Physiological Effects of Diets Unusually Rich in Protein or Inorganic Salts—This work was undertaken in order to observe the effects of exceptionally rich protein diet on experimental animals with dietaries planned according to the vitamin requirements. Observations were made as to changes in the blood, urine and kidneys under the various dietaries. Good growth was secured in the case of albino rats which were used and in some instances the protein component represented two-thirds or more of the entire calorie intake of the dietary. The blood of these animals showed a somewhat higher non-protein nitrogen content than in the case of rats on ordinary laboratory diets. The urine of the animals showed no abnormalities indicative of renal disorders attributable to the protein.

"Hypertrophy of the kidneys is a characteristic feature of the animals on a diet in which the protein intake exceeds about one-third of the food fuel of the ration. This renal response is characteristic for a variety of dietary proteins tested. The histological features of the enlarged kidneys are described. The hypertrophy has been produced by ingestion of various proteins. The period required to bring it about is surprisingly brief. Retrogression in kidney size by suitable changes in diet after hypertrophy has been induced by protein feed-

ing has also been investigated. The possibility of comparable renal hypertrophy through ingestion of various substances—urea, inorganic salts—normally excreted by the kidneys has also been studied in some detail. Urea, fed in amounts equivalent to that derived from effective quantities of protein, failed to bring about an equally noticeable renal enlargement."—Thomas B. Osborne, Lafayette B. Mendel, Edwards A. Park and Milton C. Winternitz, *J. Biol. Chem.*, 71:317 (Jan.), 1927.

The **Protein Value in Nutrition of Beef Liver, Beef Heart, and Beef Kidney**—Studies were made upon a series of 25 rats to determine the biological value of the nitrogen of beef heart, beef liver, and beef kidney. The comparable rations used upon each of the three animal products contained approximately 8 per cent protein. The compositions of the rations are given as well as tables on the data of nitrogen metabolism and biological values throughout the experiments. Except for high values obtained for heart protein from two series of rats, the results are consistent and the average biological values at the 8 per cent level were 74 for beef heart and 77 for beef kidney and beef liver. These figures are slightly higher than the values obtained in other experiments for muscle meats, that is, 74 for pork and 69 for beef. They are less than the values of 83 to 86 consistently obtained for milk proteins. At the 16 per cent level the crude protein of liver was found to have a smaller biological value (58), a confirmation of the conclusion reached in earlier experiments in that the utilization of protein nitrogen in anabolism varies inversely with the level with which it is fed, measured by the percentage of nitrogen in the ration.—H. H. Mitchell and Jessie R. Beadles, *J. Biol. Chem.*, 71:429 (Jan.), 1927.

A Note on the Bacterial Content of Ice Cream—In a limited investigation to obtain a general idea of the numbers of bacteria, especially coliform organisms, *B. enteritidis sporogenes (B. welchii)* and streptococci, present in ice cream, examination was made of 35 samples taken from various sources and exposed for sale in London during a hot period in July and August, 1925. Of the 35 samples examined, only 2 contained less than 1,000,000 bacteria per c.c. These 2 samples, containing 200,000 and 600,000 organisms per c.c., were wrapped in paper when offered for sale. Five samples contained over 1,000,000,000 bacteria per c.c. Samples containing the highest numbers of bacteria were obtained from street barrows where the tub had the greatest exposure to street dust and the large spoon was usually kept in "clean" water. The average count of 33 samples (two being uncountable on the 1:1,000,000 dilution plate) was 969,000,000 per c.c. This greatly exceeds the average count of 38,000,000 per c.c. which the U. S. Department of Agriculture has found for ice cream in the summer months. The presence of coliform organisms was indicated by production of acid and gas in litmus bile-salt lactose broth. One sample only showed neither acid nor gas in 1 c.c. or less amount. With the other 34 samples acid and gas were produced in this medium from dilutions varying from 1 c.c. to 0.000001 c.c. Acid production and torn clot in anaerobic cultures of litmus milk, inoculated with dilutions of ice cream heated to 80° C. for 10 minutes, indicated to the author the presence of *B. enteritidis sporogenes (B. welchii)*. This organism was present in amounts varying from 1 c.c. to 0.00001 c.c., which was the highest dilution used. The author points out the possibility of contamination with food poisoning organisms when ice cream is thus sold from open receptacles in the street.

He also suggests that the consumption of contaminated foods in childhood may sometimes permanently alter the normal intestinal flora so as to lead to alteration of intestinal digestion and absorption, resulting in later life in puzzling toxaemias and diatheses.—E. G. Rawlinson, *Lancet*, 211:1267 (Dec. 18), 1926.

CHILD HYGIENE

MERRILL E. CHAMPION, M.D.

Child Health Day Suggestions—The American Child Health Association once more has brought out suggestions for the celebration of May Day as Child Health Day. One is entitled "A Booklet of Suggestions for 1927" and discusses from various angles plans which might be carried out in the spirit of Child Health Day. This pamphlet also contains a list of national organizations coöperating with the American Child Health Association in the promotion of May Day as Child Health Day. The other booklet is entitled "May Day Festival Book" and is edited by Grace T. Hallock. This is most attractively gotten up and is intended for the use of the organizations upon which will fall the responsibility of putting on a May Day program, either in the city or in the country. Included also is a bibliography of pageants, plays, songs, games and stories.

These pamphlets are offered, in the words of the Association, "with the deep appreciation of the American Child Health Association to all those—officers and friends of the Association and strangers in every State in the Union, but lovers of children all—who helped make the vision of May Day serve America's children."

Prevention of Poor Appetite in Children—Chronic poor appetite develops in two steps. First, a physical or mental cause results in lack of appetite, then a forcing of food at this time fixes upon the patient a psychological aversion for food from which he may recover with great difficulty. The prophylactic measures used to overcome this were as follows:

1. Propaganda — instructing mothers and nurses as to the nature of the condition while the babies were under 2 or 3 months of age, getting them to report to the doctor refusal of food by the child
2. Treatment of first attack—marked reduction in the diet almost always the first measure prescribed
3. Prevention of weaning difficulties—an occasional bottle given from birth to all babies so that they would be accustomed to taking a bottle
4. Avoidance of sudden marked changes in character of food—food changes made gradually
5. Avoidance of overfeeding—babies put on a minimum diet
6. Prescribing of no definite amounts of food after one year of age—child's appetite allowed to be the guide
7. Telling mothers to leave the child alone at meal time
8. Allowing child's appetite play in choice of food—where there was a choice of two foods the one the child liked best most often used
9. Avoidance of pitched battles at meals

Results:

The results of this treatment as shown by the statistics of 199 consecutive cases demonstrated the following:

1. That it was not harmful to the nutrition of children to advise the parents against urging their children to eat—provided the prophylactic measures prescribed were taken—because this group of cases averaged 3.6 pounds overweight
2. That there were no children in this group who were malnourished except those who were suffering from chronic disease of some sort.—C. A. Aldrich, M.D., *Ment. Hyg.*, Oct., 1926.

The Nursery—The Strategic Point in the Public Health Campaign—Professor Winslow emphasizes a much neglected point in his article on The Nursery—"The intense importance of that period of life with which the day nursery deals."

"Twenty-two per cent of deaths from all causes in the United States are deaths of children under 5 years of age; 47 per cent of deaths from scarlet fever occur during the first five years of life; 57 per cent of the deaths from diphtheria; 78 per cent of the deaths from measles, and 95 per cent of the deaths from whooping cough. So that, even from the standpoint of environmental sanitation, and of the

control of epidemic disease, infancy is the period of supreme importance." Also mental maladjustments start in these years.

The day nursery in early days merely met the urgent need of children who had no other place to go, but this idea is passing. Also while the fact will always remain that the ideal place for the child is in the home, yet the home itself needs help and reconstruction, and this the day nurseries are attempting to do.

The points of similarity and difference between day nurseries and nursery schools will be presented in the *Child Health Bulletin* for March, 1927.

"It is in the nursery, whether that nursery be in the home or in one of the institutions, that the future of the race, physically and mentally, is to be chiefly developed."—C.-E. A. Winslow, Dr.P.H., *Child Health Bull.*, Jan., 1927.

Neonatal Mortality and Mother Nativity—Dr. Ford in a thesis dealing with neonatal mortality with special relation to the factor of mother nativity attempts "to evaluate some of those numerous and important factors that contributed to the high stillbirth and neonatal mortality rate but are not necessarily primary causes of death." Her summary is as follows:

"1. Combined stillbirth and neonatal mortality rates are doubled in mothers with visual disturbances or edema and are increased five-fold in mothers with more than a trace of albumin in the urine. Premature birth rates are twice as high when visual disturbances or a trace of albumin are present, while larger amounts of albumin, or albumin combined with a high blood pressure are associated with premature birth rates almost seven times the normal rate. Syphilis is at present a much less serious factor in prognosis where antisyphilitic treatment is adequate.

"2. In order to get the best results with prenatal work, modifications should be made according to the nationality and color of the mother, because of (a) a high incidence of contracted pelves and of albuminuria and high blood pressure among native white mothers; (b) a very high incidence of syphilis and contracted pelves among negro mothers; (c) a high incidence of contracted pelves and albuminuria and high blood pressure among Irish mothers; (d) a low incidence of contracted pelves and albuminuria and high blood pressure among Italians, also a low incidence of the latter symptoms for Russian mothers.

"3. The chief factors causing the differences in the neonatal mortality rates for native, negro, Irish, Russian and Italian infants are prenatal and controllable. The high rates for the three former groups can be made to approach much more nearly the low rates for the two latter groups.

"4. While Italian and Russian mothers should receive no less attention than at present, much greater effort should be devoted to prenatal work for native white, Irish and negro mothers."—Helen W. Ford, Ph.D., *Amer. J. Hyg.*, Jan., 1927.

Infantile Paralysis in Broadstairs, England—Dr. A. M. Watts, medical officer of health for East Kent, United District, reports an interesting outbreak of infantile paralysis in Broadstairs, England. Between October 14 and October 29, 1926, 61 cases were notified and 6 more cases traceable to this outbreak were discovered, making a total of 67 cases. There were 4 deaths.

The disease was limited mainly to children attending private schools in the district, the poorer members of the community almost entirely escaped. The outbreak started suddenly and subsided suddenly.

The source of infection was thought to be from healthy carriers among the boys of 12 private schools, some of whem spent the summer on the continent where there were outbreaks of infantile paralysis. Three boys who came down with the disease were known to have spent their vacations where infantile paralysis was epidemic.—A. M. Watts, M.D., *Pub. Health*, Jan., 1927.

Industrial Smoke and Rickets—Dr. William Barr, M.O.H., discusses rickets in one town, Rotherham, where smoke pollution is very marked.

"The most outstanding disease of childhood in Rotherham is rickets, and the number of people who are seriously deformed as a result of having suffered from rickets in childhood is very great."

About one-half of the children seen at the clinics exhibit some manifestations of rickets. Rickets being due to food deficiency as well as lack of ultra-violet rays, it might be wholly due in this locality to the former but experience shows that the properly fed babies develop rickets just the same.

Dr. Barr states that they hope to establish soon an artificial sunlight clinic at Rotherham so that light treatment may be given to early cases.—William Barr, M.D., *Med. Off.*, Jan., 1927.

Antirachitic Properties in Human Milk by Irradiating the Mother—The milk of a woman was tested previous and subsequent to a period of artificial irradiation. Young rats were placed on a low phosphorus diet. After roentgenograms showed rachitic lesions to be present 25 c.c. daily of human milk was added to the diet of the rats and at the end of 9 days X-rays were taken. There was found to be no visible healing of the epiphyses. The woman was then irradiated by the mercury vapor lamp. The lamp was placed at a distance of 60 inches and the exposure was made over a period of 56 minutes. Irradiation was carried on every other day for a period of a month. The milk was again collected and fed to a series of rachitic rats in 25 c.c. per capita amounts. There was marked calcification of the epiphyses. It was found that ultra-violet irradiation not only confers direct protection from rickets but enables the nursing mother to transmit the protective factor to her offspring. Ultra-violet irradiation of a nursing woman brought about a marked increase in the antirachitic potency of her milk. Fractionization of the milk showed that this effect was due to an augmentation in the antirachitic factor. It is suggested that such irradiation be employed in order to protect infants from rickets and nursing women from excessive drain of calcium and phosphorus.—Alfred S. Hess, M.D., Mildred Weinstock, B.S., and Elizabeth Sherman, B.A., *J. A. M. A.*, Jan. 1, 1927.

School Medical Examinations and Health Service and **Suggestions for Complete Health Examination Records**—Under these two titles in successive issues of *The Nation's Health* Dr. Levinson of Connecticut, and Drs. Patton and Bolt of California discuss methods of carrying on school medical service, including the type of record which ought to be employed. These two articles from widely separated sources stand as good examples of one school of thought with respect to the medical supervision of the child in the public schools. They may be called representatives of the group which believe in a pediatric examination of the school child rather than the examination by the so-called "screening" process.

Dr. Levinson gives in detail the system of medical inspection in the schools of New Britain, Connecticut. In the New Britain schools they have representatives from many nations and find that preventive medical work, in the words of Dr. Levinson, "requires great effort and persistent and continued follow-up work." The city has a population of 70,000. The school health work is administered by 2 full-time physicians, a woman for the girls and a man for the boys; 3 full-time nurses; 3 full-time dental hygienists; 1 half-time dentist and 1 full-time nutrition worker. Every child in the public and parochial schools from the kindergarten through the high school receives a complete physical examination once a year. The children are stripped to the waist which gives an opportunity for careful examination of heart and lungs and an even more complete examination is indicated by the fact that a hurried inspection is made for hernia and other abnormalities below the waist line.

A diagnosis is always accompanied by recommendations as to further consultations and limitation of school work. Various minor ailments are referred to the school nurse who is said to treat these and who refers more serious cases to the family physician or school physician. A significant point is that which has to do with the home calls of the nurse. The statement is made that the nurse makes home calls during the school year only in special cases because of the relatively small number of nurses employed. This is at variance with the more usual feeling that the most important job the school nurse has is her home visits.

A list of the remedies used includes tincture of iodine, mercury ointment, sulphur ointment and zinc ointment, which would indicate that more or less treatment is given in the schools. Here again the criticism might well be made by many that the school is no place to conduct a modified hospital dispensary.

A dental clinic is run 5 mornings a week for those unable to afford dental care. It might be criticised as placing the school in the position of running a surgical treatment dispensary, and a charitable dispensary at that. Hot meals are served to the children in the open-air school, who have at their disposal the whole time of a school nutritionist. An interesting point is that the children in the open-air school receive cod liver oil while in class.

This work in New Britain is deserving of careful consideration both because of the serious

and conscientious attempt on the part of the authorities to do a good job and also because of the fundamental principles involved, upon which there well might be a very sharp difference of opinion.

Turning now to the system of record keeping suggested by Dr. Patton and Dr. Bolt we find again the same emphasis upon a complete examination. The statement is made that "the physician's examination can be done in fifteen minutes, and with five minutes for a talk with the parents in each case. He can handle about three cases per hour." The system is suggested as being more or less ideal yet one which is perfectly feasible in some localities, and it is recommended by the writers as a desirable standard. The form of record used is very complete and includes space for an abdominal examination, temperature, blood pressure, urinalysis, and blood.

For an examination of children attending a certain type of private school such an outline would meet with but little criticism. As applied, however, to public schools the question would be raised by many as to whether the assumption of this amount of responsibility by the schools would not trespass upon the responsibility of the family; and furthermore, even if this were not true, whether it would be possible to carry out such service as this at a reasonable expense.—Marie Pichel Levinson, M.D., *Nation's Health*, Dec. 15, 1926; Edwin F. Patton, M.D., and Richard A. Bolt, M.D., *Nation's Health*, Jan. 15, 1927.

Making a **Dispensary Educate**—In the Boston Dispensary a plan has been effectively worked out to educate the people coming to the various clinics along the lines of good health habits while they are waiting to see the doctor. A health educator working under the direction of the Chief of the Food Clinic, by means of informal talks, posters, exhibits, movies, and so forth, gets the message across. On Saturday morning, the big day, 5 teachers from the Boston public schools volunteer their services to help, and the waiting rooms of 5 clinics, the Children's Medical, the Dental, Skin, Food, and Posture, are made the center for teaching health. Once a month a health party is given for the mothers of the children coming to the clinics. At each meeting a member of the dispensary staff gives an informal talk on how to keep the children well. The Food Clinic in the dispensary has become an important center for teaching and demonstrating the science of nutrition to medical students, public health students, social workers, teachers in training, student dietitians, etc. To each of these groups the health educator presents developments in the field of health teaching.—Mary Pfaffman, *Survey*, Jan. 15, 1927.

Toys as Pediatric Armamentarium—This interesting and unusual article is of value to all who deal with children, by no means to pediatricians alone but to nurses and parents and others.

Dr. Sobel discusses "the value of a number of selected toys as they can be applied in office practice in securing the attention, the good will, the poise, the confidence and the coöperation of little patients," and as a means of making physical examination and treatment easier and more thorough in both office and home. He demonstates as well the real importance of selection, use and care of play material in the home and the permanent effect on the child's training and character.

"Toys properly used furnish a stimulation and an outlet for interest, imagination, wholesome and productive activity, and social coöperation, and tend to dramatize life in its actual every day workings."

Dr. Sobel quotes the story of the teacher of pediatrics who appeared before his lecture class with a large valise in his hand and remarked, "Gentlemen, I am going to show you some of the instruments which I have found useful in the diagnosis, care and treatment of diseases of children." He then took from his valise a selection of toys. The child's response to toys often presents to the physician the best possible summary of individual behavior—the well trained child asks for them politely, the untrained child seizes them. The "tantrum child" performs in the typical way if thwarted in getting the toys he sees. Those interested in toys and play will find the following helpful:

Best Toys for Children and Their Selection by M. S. Leonard, a pamphlet, and the book entitled *Permanent Play Material for Young Children* by C. G. Garrison.

Dr. Sobel reminds us that inspection is most helpful in making diagnosis in childhood. "Often enough observation alone determines a diagnosis, and while the child is busy with a toy and relaxed, one may observe objective signs and symptoms—gait, attitude, posture, nutrition, facial expression, physiognomy, etc., which aid to establish a diagnosis."—Jacob Sobel, M.D., *Arch. Pediat.*, Jan., 1927.

EDUCATION AND PUBLICITY

EVART G. ROUTZAHN *

Questions and Answers—The Latest Fad—The very latest in some quarters is the asking and answering of questions on all manner of common or curious information. See the page in every weekly issue of *Liberty* as an example. It seems worth trying out some public health questions—about development of public health activities, world known pioneers, and local history and facts. Who will help work up the questions? Who will send in one or two? We can try them out in monthly bulletins, and some daily papers may take them. Please let the editor hear from you.

Why So Much Wasted Correspondence?—The stream of requests for health educational material flows on, stimulated by lists of sources which give inaccurate or misleading information. Unfortunately the lists of sources printed in books are copied in state and city courses of health education, and are distributed in normal schools and training classes. It seems inexcusable for those issuing books to offer sources which have not been confirmed. Proof of the carelessness is the fact that in several later books, which copy from one issued three or four years ago, there is a reference to an organization that never existed. Several of the most significant books on classroom methods include references worse than useless.

Publicity at Des Moines in May—Many public health workers will participate in the sessions of the Committee on Publicity Methods and the Educational Publicity Section of the National Conference of Social Work at Des Moines, the week beginning Wednesday, May 11, 1927. Among the topics are: New Devices for Campaign Window Displays and Street Decoration; Rural Newspaper Publicity; Getting the Subject Before the Meeting; Uses of Statistics in Publicity; Educational Slants in News Stories; Recent Adventures in Arousing Interest; How to Diagnose Your Public; The Annual Report; Annual Meetings; Must Social Work Writing Be Dull? Detailed program will be supplied by Committee on Publicity Methods, 130 East 22d St., New York, N. Y.

Tint Block Postal Cards—A distinctive and useful medium for educational and advertising purposes is the 1-cent U. S. postal card with a tinted back-ground upon which the message is multigraphed or printed. A public meeting can be announced; committee meetings through a period of months can be called; a brief case story can be sent to ministers, teachers or other groups; or other information can be distributed on these cards with more effectiveness, in many cases, than if made up as a letter or a printed leaflet.

The back of the postal card is first printed with a tint of your choice, allowing ⅜" margin on the four sides. In one instance the tint block cost $2.50; 1,000 blank cards, as extras, cost $1.50; 4,000 postal cards were $40.00; and the printing cost $17.00 (in New York City), a total of $61.00 for 5,000 cards including prepaid postage on 4,000 of them—less than ½ cent each for a unique card costing but 1 cent to mail. Ask the editor of this department for a sample.

What Do Farm Women Want?—Coming from 21 states and Canada, 23 women and two men spent three days in determining what farm women want—*from the point of view of farm women.* The 36-page report is a mosaic of bits of ideas and information—there were no papers or addresses—out of which all concerned with rural conditions may glean stimulating ideas. Under health education these questions were discussed: What Agencies Contribute to Health Education? How Can a Demand for Health Education Be Created? What Can Farm Women Do to Promote Health Education?

The agencies listed as contributing to health education are: Extension Service; Home Bureau; Farm Bureau; Movies; Radio; Ex-

* Please address questions, samples of printed matter, criticism of anything which appears herein, etc., to Evart G. Routzahn, 130 East 22d St., New York City.

hibits; American Red Cross; Advertisements; Grange; Federated Women's Clubs; Libraries; Foundations; American Home Economics Associations; Better Homes in America; Public Schools; Congress of Parents and Teachers; University Extension; Public Health Departments; Children's Bureau; Churches; Publications; National Education Association; State Departments of Education; Lyceums; Chautauquas; League of Women Voters; Patriotic organizations; Conservation Societies; W.C.T.U.; Y.M.C.A.; Y.W.C.A. "Why, then, isn't it being taken care of amply?" One answer was: "We don't accept it because the demand does not come from us. If we get the community into that frame of mind where they want the thing, we will accomplish something."

For a copy of the report apply to *The Farmer's Wife*, St. Paul, which with the American Country Life Association, called the conference.

Indiana **State Baby Contests**—Starting with 72 babies in 1920, the state baby contest at the Indiana State Fair last summer had 1,234 babies in the advance registration. Three years ago "the *Indianapolis News* began a splendid campaign of publicity for the contest in coöperation with the State Board of Agriculture and the child hygiene division of the State Board of Health, and the building expansion for the State Fair Board included the erection of a Better Baby Building. This was assured by the donation of the Oliver Building.

"The new Better Baby Building is unique in the history of state fairs. The first of its kind, it stands as a model for other cities. Its possibilities as a baby health center display are enhanced by a six-foot window elevation around the entire building.

"During the examination of babies, the crowds follow a broad concrete walk which leads around the building along the north side, watching mental tests, weighing and measuring, and physical examinations, and reading the placards which detail the procedures. Wide divided corridors make a history room, height and weight room, and baby playroom.

"On the south side, the crowds inspect the day nursery with its rows of white beds where babies are placed, and the exhibit room where devices are shown and aid in the care of mothers and babies. A center of attraction is the adjoining playground where children up to school age play while parents view the fair. There, under supervision of a nurse and playground supervisor, happy children swing, teeter, ride the merry-go-round, or play in a sand pile."—*Nation's Health*. Dec., 1926. This three page article gives much interesting detail as to the building and the handling of the babies and the visitors, and the state-wide publicity and follow-up work.

What I Have Read Recently—"Please tell me what book or article you have read recently that helped you directly or indirectly in some fashion in educational or publicity work (It might have been a life of Roosevelt—or even Hamlet!)." Here is the first answer: "One book I recently read which helped me directly in educational work was Sir William Bragg's *Concerning the Nature of Things*. This is a work containing the so-called Juvenile Lectures of the Royal Society of England, and deals with the structure of the atom and the nature of solid, gaseous and fluid matter. The principal value of this work as an educational instrument lies in that it is a splendid example of the difference between the popularization and the vulgarization of knowledge.

"Sir William Bragg in his book makes perfectly clear the structure of the atom by means of a series of carefully thought out analogies and experimental demonstrations. He succeeds in imparting a fundamental and basic understanding of the nature of matter without indulging in any vulgarisms and without so stretching the facts involved as to distort and destroy all perspective. In other words, he is a true popularizer of scientific facts.

"How rare this ability is was graphically illustrated to me when, at a recent conference attended by six hundred dentists and physicians, a dentist arose and made the startling announcement that in a minute cavity in the tooth of a person there were as many as 6,392,000,000 germs! He failed to state what kind of germs they were, what degree of harmfulness there was in them, how common the condition was, etc. It was just bugs that he was afraid of. So much for your query."—Iago Galdston, M.D., N. Y. Tuberculosis and Health Assn.

ANNUAL REPORTS

A section of a large scale outline map of the city covers the front and back covers of the Hartford Community Chest annual report of member agencies. No street names or numbers appear on the map. The title of the booklet is "North, South, East and West." Effective.

About Bequests—a one-page leaflet enclosed in the annual report of Henry Street Settlement, 265 Henry St., New York, N. Y., seems ever so much better than the mere statement of the legal form for bequests so frequently included in the reports of volunteer agencies.

The *Business Report* of Consumers' Coöperative Services, Inc., 54 Irving Place, New York, N. Y., shows how a sober, dignified report can be enlivened by the use of simple line drawings. The double-page cover design carries a suggestion for an agency having several branches, clinics, etc. Free.

Milestones—A Chronicle of Significant Events and Steps in the Progress of the Cattaraugus County and Syracuse Health Demonstrations. State Charities Aid Assn., 105 East 22d St., New York, N. Y., 1927. 16 pages. Free. Effective style for reporting chronologically the steps taken in a health project.

What the Public Health Federation Has Accomplished, annual report of Public Health Federation, Cincinnati. An interesting, straight forward review of the general work and that of 8 divisional (coördinating) councils. The 77 organizations represented in the Federation range from the American Red Cross to the Y.W.C.A.

What Happened, annual report of the State Charities Aid Ass'n, 105 East 22d St., New York, N. Y., has too many good points for them to be described. You will wish to borrow a copy before getting out your next report. Of course, it has a table of contents.

Wisconsin's Child Welfare Special: Résumé of Five Years' Work—1922 to 1926, by Sylvia G. Stuessy. Bureau of Child Welfare, State Board of Health, Madison. A mimeographed report—printed cover—table of contents.

AWARDS

Two prizes of $50,000 each have been offered by William Lawrence Saunders for the discovery of what human cancer is, its prevention and its cure. Address American Society for the Control of Cancer, 25 West 43d St., New York, N. Y.

CAMPAIGNS

How the Society's Educational Campaign Is Being Carried On. *Campaign Notes.* American Society for the Control of Cancer, New York, N. Y., Jan., 1927. Outline by states.

May Day Festival Book, edited by Grace T. Hallock; *May Day—Child Health Day Bulletin of Suggestions.* American Child Health Association, 370 Seventh Ave., New York, N. Y. These greatly amplified 1927 editions will be wanted by everyone interested in health education and publicity. Each 10 cents.

DATES AHEAD—APRIL, 1927

Daylight Saving begins
1—April Fool's Day
3–11—National Negro Health Week. Address: U. S. Public Health Service, Washington, D. C.
10—Palm Sunday
11–16—Pan Pacific Conference on Education, Rehabilitation, Reclamation and Recreation, Honolulu, Hawaii. Address: Secretary of the Interior, Washington, D. C.
13—Thomas Jefferson's birthday
15—Good Friday
17—Easter
17–18—Passover (Hebrew)
23—7th Day of Passover (Hebrew)
24—8th Day of Passover (Hebrew)
24–30—American Forest Week. Address: Forest Service, Department of Agriculture, Washington
24–May 1—Better Homes Week—Address: Better Homes in America, 1653 Pennsylvania Ave., Washnigton, D. C.

NEW PERIODICALS

Clean Air, Smoke Abatement League of Great Britain, 33 Blackfriars St., Manchester, England.

The Journal of Preventive Medicine, Institute for Infectious Diseases, Chicago. Edwin O. Jordan, editor. Bi-monthly.

POPULAR ARTICLES

The Conquest of Scarlet Fever, by W. W. Keen. *Woman's Home Companion.* Nov., 1926. "A modern miracle of healing."

If You Want to Be a Nurse, by Virginia Moore. *American Girl,* New York, N. Y. Feb., 1927. Popular recruiting article.

Only a Cold? *The Metropolitan,* Metropolitan Life Ins. Co., New York, N. Y. Vol. XXX, No. 2. Free.

Watch Out For Health Fads, by William S. Sadler. *American Magazine,* New York, N. Y. Dec., 1926. "Don't lose your sense of proportion because the enthusiast has lost his."

Your Mirror and You, by Grace T. Hallock. *American Girl,* New York, N. Y. Feb., 1927. With the clever illustrations would make a folder for girls.

PROBLEMS AND METHODS

"The J. N. Adam Memorial Hospital boasts of another unique feature—it is the only hospital in the world having a zoo for the entertainment and pleasure of its patients. Each year several different species of animals have been added, so that now child patients have an unusual opportunity to study animal life at first hand."—Perrysburg—A Mecca for Heliotherapy, by Robert E. Fitzgerald. AMERICAN JOURNAL OF PUBLIC HEALTH. Sept., 1926. 16: 895. (See also earlier references in this department to projects for making institutions attractive in publicity.)

A symposium on "Dental Health Education" includes "Whom to Educate," "Begin With the Parent," "The Community Program." "Educational," in the program, includes clubs, churches, industrial plants, etc.—*Commonhealth* (Mass.). July–Sept., 1926.

Are You Observing? by R. F. Foster. *Everybody's*. July, 1926. "Accurate observation is the foundation of all useful knowledge." Application: to our study of people we wish to reach, their attention to our exhibits and other material; to help meet critics who "know" or "saw" something against our work.

Fourth English-Speaking Conference on Maternity and Child Welfare, by Edith H. Smith. *Public Health Nurse*. Dec., 1926. Includes account of the English "fathercraft" movement.

Motives Which Bring Action. AMERICAN JOURNAL OF PUBLIC HEALTH. May, 1926. Discussion on health examinations based on samples of publicity and educational material distributed at one of the sessions of the Health Education and Publicity Section at the annual meeting of the A.P.H.A.

Posters, Past and Present, by M. Carter Roberts and Beatrice Short. *Public Health Nurse*. Dec., 1926. Includes a series of "rules" for judging the probable value of posters, based on the adult poster session at the A.P.H.A. meeting at Buffalo. With list of most of posters, placards, etc., available nationally without any discrimination through the application of the rules embodied in the article.

TECHNICAL

"What Editors Appear to Like"; "Adventures in Arousing Interest"; "Glancing Through the Magazines"; and "What Do You Send to Your Friends and Supporters?" are some of the departmental headings in the January issue of the *News Bulletin* of the Committee on Publicity Methods, 130 East 22d St., New York, N. Y.

Good Books for Users of Direct-Mail—a descriptive catalogue of books written from the advertisers' angle. *Postage*, 18 East 18th St., New York, N. Y. Free.

The High Cost of Giving, by Forrest Crissey. *Saturday Evening Post*. Dec. 11, 1927. A colorful discussion of the problems of givers and methods for inducing gifts. The paragraphs under "Mail-Order Appeals" are inadequate and misleading.

A Primer of Propaganda, by Garret Garrett. *Saturday Evening Post*. Jan. 15, 1927. Interesting discussion of war time and post war propaganda. A striking example of "propaganda" methods used by most critics of propaganda.

PUBLIC SPEAKING

How is Your Human Machine? by George H. Rockwell. "A practical health talk for practical business men"—to the Rotary Club of Syracuse. Copies from Onondaga Health Association, 327 Montgomery St., Syracuse, N. Y. Free. Title too broad. "The Human Carburetor" would have been better.

A Square Meal, by R. H. A. Plimmer and Violet G. Plimmer. *Hygeia*. Nov., 1926. The 10 illustrative diagrams seem to offer material for a simple chalk talk requiring no drawing ability on "good" foods and "bad" foods.

A Talk on Germs, by H. E. Kleinschmidt. *Canadian Red Cross*, Toronto, Canada. Nov., 1926. Outlines of a talk illustrated by various objects. Reprinted from *World's Health*, Paris, France.

Topics for a luncheon meeting held in one city last month: "Industrial Accidents to Children," "Periodical Health Examination as an Aid to Longevity," and "Child Health Education." And the audience paid for their luncheons!

MOTHERS

Lesson Outlines for Maternity Classes is a 95-page pamphlet outlining 12 lessons, with an orderly arrangement of the material to facilitate both preparation and class use. Under "Illustrative Material" are suggestions for simple, home-made posters, and copy for leaflets. The latter are simply expressed summaries of the lessons. East Harlem Nursing and Health Demonstration, 354 East 116th St., New York, N. Y. 35 cents.

PUBLIC HEALTH NURSING

MIRIAM AMES, R.N.

Conference of State Directors of Maternity and Infancy Work—The third annual conference held at the Children's Bureau, Washington, D. C., January 11–14, was of especial interest to public health nurses.

The state directors of public health nursing were invited to attend all conferences, it being the first time this group has been represented at these conferences.

Much of the general program was given to the consideration of nursing problems, including training of the obstetrical nurse, standards of training of public health nurse, supervision of field nurses, the evaluation of maternity and infancy work in a generalized program and the methods of training staff nurses in prenatal and infant care.

Dr. Frank Howard Richardson in a breast feeding demonstration showed the simple methods of stimulating and maintaining the supply of breast milk. He urged the simple combination of milk and water, when complementary feeding is necessary, rather than complicated modifications.

Dr. S. Josephine Baker in a committee report on the cost of work said that it ought to be possible to accurately compute the cost of each unit of work. Such studies, however, should be used primarily "within the family" as measurements of the comparative value of the various units in proportion to the cost.

Dr. Ralph Lobenstein's account of the Tioga County, New York, demonstration in prenatal care, an experiment in rural nursing care under the direction of the New York Maternity Center, stressed especially the almost perfect coöperation possible between doctors and public health nurses in a rural community.

The showing of the new rickets film, produced under the direction of Dr. Elliott in the Children's Bureau rickets demonstration in New Haven, Connecticut, aroused great enthusiasm. This film should be a great help to public health nursing associations in their educational programs.

The greatest needs in furthering our maternity and infancy work seemed to be rather uniformly emphasized in each day's program—better obstetrical training for both doctors and nurses; improved educational methods to arouse public interest; more accurate methods of estimating unit costs which would insure the best investment of funds; the necessity of building all work for permanency, more accurate reporting and more intelligent analyses of vital statistics.

The discussion following the suggestion that provision should be made for training public health nurses in midwifery, especially for the rural field, brought forth only commendation. The proceedings of this conference will probably be available in a government bulletin at a later date.

Generalization and Specialization in Nursing and Health Services—This question has provoked much thought and some controversy on the part of public health nursing administrators and boards of directors within recent years. Here and there, in a limited area of a large city and in a few cities of moderate size, courageous public health nursing agencies, each formerly serving an age group or individuals suffering from a particular disease, have decided to cast their lot together and become partners in a joint undertaking to provide a complete nursing and health service for the family, including all necessary preventive and curative care, with a single nurse serving a given area. The result of these experiments has been largely a matter of opinion because of lack of careful analysis of results based upon statistical studies. The report, therefore, of the results obtained in a generalized and specialized nursing and health service by the East Harlem Nursing and Health Demonstration is not only of great interest, but is the first acceptable evidence provided as to the relative merits of the two plans.

The study is based upon an analysis of the service rendered during the calendar year 1924, the second in the life of the demonstration. The area covered includes 2 districts of 10 blocks each, with a total estimated population

of 40,000. In one district a generalized nursing service was rendered, in the other a specialized service. The districts vary somewhat as to population. The generalized district contained 53.4 per cent of the total population; it also contained 54 per cent of the total foreign-born and 72 per cent of the total number of illiterates. It appears, therefore, that the conditions of work were less favorable in the generalized district. Approximately the same number of hours of service in the home were rendered—20,110 in the generalized district and 19,481 in the specialized district.

An industry wishing to compare the efficiency of the two plans of organization and administration would probably seek an answer to the questions: How do these two plans compare as to the quantity of output, quality of output, and cost of the article produced? The East Harlem Study proceeds in the same direct way. It asks and answers the questions—How do the generalized and specialized services compare as to (1) quality of service, (2) quantity of service, (3) cost per home visit?

Briefly stated, the following conclusions were reached: (1) There was no demonstrable difference in the quality of service rendered, (2) In the generalized area, the workers visited 27 per cent more families, gave care to 46 per cent more individuals and made 40 per cent more home visits, (3) The cost per visit in the generalized area was 89 cents as compared with $1.23 in the specialized area.

It appears, therefore, that a demonstration has been made showing that a generalized service can produce an increase in the volume of service, a decrease in the unit cost of service, without lowering the quality of the service given. This report doubtless will claim the careful study of those responsible for public health nursing and health service everywhere. It is abundantly illustrated with graphs and tables.—A Comparative Study of Generalized and Specialized Nursing and Health Services, October, 1926. East Harlem Nursing and Health Demonstration.

Health Facts in Periodicals—Two significant articles on heart disease appeared in recent issues of magazines, destined to reach very different groups of readers.

The first of these, Dr. Louis I. Dublin's article entitled "The Problem of Heart Disease," in *Harper's Magazine* for January commands our attention at once: "Heart disease is now the first in the list of causes of deaths." Not only is it to be thought of in relation to the death rate, but it "is a leading cause of disability and invalidism," which means that people of all ages are faced with the possibility of death from heart disease.

The opportunity for conserving life is second only to cancer, and herein is a challenge to those in the public health nursing field to assist in bringing this condition under control. The following extracts indicate the causes and extent of this menacing deviation from health:

"Disease of the heart valves is lamentably common, usually the aftermath or an accompaniment of disease elsewhere in the body, such as scarlet fever, serious dental infection, tonsillitis, or acute rheumatic fever, more rarely syphilis. It is estimated that acute rheumatic fever alone is responsible for 25 per cent of all cases of heart disease, and that syphilis accounts for 10 per cent more."

"The most common form of heart trouble is associated with hardening of the arteries or with elevated blood pressure. Forty per cent of all heart cases are of this type."

"The origin of about 10 per cent of the cases of heart disease is still unknown. In the remaining 15 per cent of the cases the cause may be one of a number not so easily classified, such as alcoholism or an attack of goiter."

Two methods of attacking the problem are suggested—dealing first with the individual and secondly with the community as a whole. Right living is one direct method of avoiding heart impairments. Children can be protected against infections, and adequate convalescence may be provided for the patients who have contracted diseases frequently followed by heart disease. Cases of tonsillitis and sore throat, generally treated so casually, should be given added attention. The periodic health examination brings to light many cases of impaired heart functioning, and "is the key to our problem as far as the individual is concerned." Heart clinics provided with skilled medical examiners and adequate equipment, sanatoria, and convalescent homes are all community responsibilities. As public health agents, how can we help to make these realities?

The second article appeared in the January *Public Health Nurse*, "Newer Methods of Cardiac Efficiency," by M. L. Woughter, formerly Executive Secretary of the American Heart Association. It offers a similar challenge: "Heart disease presents one of the most urgent public health problems and must be the concern of nurses in the field of public health."

The following measures outline the responsibility of the nurse:

"Gaining accurate knowledge on the problem of heart disease

"Teaching the prevention of initial infections, that it is unnecessary, for example, for all children to have measles, whooping cough, etc.

"Emphasizing the importance of considering that 'growing pains,' that is, muscle, joint, and bone pain are usually a form of acute rheumatic fever and require treatment as such

"Urging special care and treatment after any infection, such as the keeping of the patient in bed at least one week after the temperature is normal

"Emphasizing the need for periodic health examinations and a *reëxamination* after every infection

"The following, with cardiac patients, are the general rules for health with a special reference to the needs of the individual patient:

"Proper rest with windows open

"Selected occupations to fit needs of the patient

"Exercise according to the patient's physical ability as outlined by a medical director

"Special care as to the quality and quantity of food

"Happy environment and recreation."

Not an easy task, but a great opportunity to ameliorate a condition, the prognosis of which "is neither very clear nor very encouraging."

The Present Status of Whooping Cough—The public health nurse has made and watched others make fruitless efforts to restrict the activities of the child with whooping cough, knowing that the spread of the disease to others was almost inevitable, no matter how earnestly the parents and community authorities tried to work together. She has visited children prostrated with the pneumonia which too often follows and is two frequently fatal. She has inquired into the history of little patients with organic limitations of one kind and another, to find often that the story leads back to whooping cough.

It is only in the past few years that any methods of treatment or prevention have been worked out that seem to offer definite promise and Dr. Lawrence Smith has given an admirable presentation of them in a paper entitled, "The Present Status of Whooping Cough" appearing in the November issue of the *Public Health Nurse*. Although he states definitely that the goal is still very far distant, and that in the process of studying the disease, complicating factors are constantly being discovered which impede progress, nevertheless, the present accomplishments and process of experimentation must command the enthusiastic interest of every public health worker.

The work of the Boston Floating Hospital and other coöperating Boston institutions, which Dr. Smith is describing, was started within the past few years following markedly successful efforts in Denmark to diagnose early cases of whooping cough by bacteriological cultures and to treat with vaccines from active cases.

This culture method of diagnosis is accurate in a large percentage of cases, but the process of laboratory growth of the organism is so slow that the active case is left in the community for too long a period to check the spread of the disease or to make treatment of the individual case very effective. Therefore, suspected cases are subjected to other examinations at the same time, the most valuable of which is a differential blood count. Positive cases of whooping cough have shown quite consistently a disproportionately large number of lymphocytes in the white cell count, which itself is increased to nearly double the normal count. X-ray findings of thickened peribronchial tissues and enlarged hilus lymph nodes are also indicative of active whooping cough. These signs, together with a history of exposure are, as Dr. Smith says, not actually diagnostic but "of very great significance in establishing a tentative diagnosis."

Various treatments for early cases have been tried, with indications that the combined use of vaccines and X-ray produce the best results. Emphasis is laid on the need for using freshly prepared vaccines in adequate dosage and continuing injections throughout the course of the disease. Such early treatment with vaccine alone is sometimes effective in checking the progress of the disease. The use of X-ray alone has produced some splendid results, especially with small or malnourished babies. The treatment is given under carefully controlled conditions.

Dr. Smith makes modest claims for the work which has been done, but does state that some progress is evident in the early diagnosis of whooping cough, that prophylactic treatment of exposed cases is an accomplished fact, and that the interest which has been aroused in this disease is bound to lead to discoveries which will ultimately reduce it to a negligible place as a menace to community health.

Social **Hygiene and the Nurse**—"Social hygiene should imply the study of all those forces which act for and against the perfected and ideal relation of men and women to each other, and of both of them to the child and the reproduction of the race."

In this statement, Dr. John H. Stokes strikes the keynote of his paper "Social Hygiene and the Nurse"; it is a conception which he emphasizes repeatedly, as he proceeds to the medical aspect of venereal disease.

I. *The Problems of Syphilis and Gonorrhea*
The general course of the two diseases, their prevalence, and their effect upon men and upon women, are described.

II. *Interpretation of Tests*
A. For Gonorrhea
"Repeatedly negative smears after massage and passage of sounds at intervals of several weeks, is a fair test of cure," in the man. "In the woman, all signs fail," microscopically speaking.
B. For Syphilis
Here Dr. Stokes makes a plea for the early diagnosis, while the chances of use of the darkfield as a means of cure are 25 per cent better than they will be after the blood has become infected. He explains points which must be borne in mind in accepting the Wassermann blood test, and the test of the spinal fluid.

III. *Mechanism of Transmission and Control of Infectiousness*
A. In Gonorrhea
Transmission is by means of discharges containing the germs. The eyes of new-born infants and the genital tract of young females are especially susceptible. The safeguarding of the baby is by means of treatment of the mother before the baby's birth, and the use of silver nitrate in the baby's eyes. The prevention of spread of vulvo-vaginitis depends upon the alertness, quick action, and effective teaching of the nurse in orphan asylums, hospitals, or tenement homes.
B. In Syphilis
Here are included 14 rules, too long to copy here, but so valuable to the public health nurse that she may well clip them from the October number, *American Journal of Nursing*, and keep them in her desk for ready reference.

IV. *Curability of Syphilis*
This is summarized under 9 points, as useful to the nurse as are the above 14.

V. *Organizing Large-scale Treatment of Venereal Disease*
Clinic treatment of these diseases has developed to a greater extent than in perhaps any other phase of medicine. It is practical for various reasons. The social worker contributes very greatly to the cure and rehabilitation of the venereal disease patient.

VI. *Venereal Disease and Marriage*
"The effort must be, therefore, to keep the man with syphilis from marrying for 5 years from the time he acquired the disease."
"The protection of the uninfected mother from the syphilitic father becomes thus the first aim of prevention."
If the mother has been infected, the child may be protected by treatment of the pregnant mother.
"A necessary sequel to all such treatment must be observation after delivery for both mother and child over a period of months and years, not weeks."
There follows a description of the symptoms of hereditary syphilis.

VII. *Industrial Medicine and Venereal Disease*
Gonorrhea is not a particularly acute problem in industry, but "many a claim for compensation has been carried along for an indefinite period on complications due to syphilis, which arose after an injury, but were not actually due to it."

VIII. *Prophylaxis*
Certain local applications to exposed parts are effective. "In the case of pin- and needle-pricks, and of the splashing of infected blood into the mouth or eye, . . . that of administering at once 2 or 3 successive doses of neoarsphenamine in the course of 3 or 4 days must be employed."

After this review of the technical problems of venereal disease, Dr. Stokes again emphasizes the larger aspects of social hygiene. He charges the nurse to bring her intelligence to bear "fearlessly, hopefully, determinedly, and seriously" upon sexual institutions, into the "study of the problems of marriage with a genuine deference for the landmarks of this great battlefield of race and personal idealism."

Education for the sexual life is progressing. Parents are learning to teach their children; the need for "education in the art of getting and being married" is increasingly appreciated. More attention is being paid to misunderstood adolescents.

In conclusion, Dr. Stokes urges the nurse to learn to play, learn to work, and to make the square deal, unselfish generosity and love her guiding principles, that she may have the strength and wisdom to aid in straightening the tangles of the sexual life.—John H. Stokes, M.D., *Am. J. Nursing*, Sept.-Dec., 1926.

LAW AND LEGISLATION

JAMES A. TOBEY, LL.B.

DURING January more attention than usual was devoted by Congress to matters of interest to sanitarians. Besides passing the bill for the 2-year extension of the Federal Maternity and Infancy Act, considerable time was spent in the Senate in discussion of the milk importation bill, and the House passed a number of minor measures of interest.

Progress on Federal Health Correlation—At the beginning of February, some action on the Parker bill (H.R. 10125) for the coördination of federal health activities seemed to be impending. A copy of the report on the national government and public health had been presented late in January to the President, who expressed interest in the subject and announced his intention of reading the salient parts of this report. As a consequence of the interview with him by Haley Fiske, acting in behalf of the informally organized National Health Conservation Committee, the President took suitable action to dislodge the Parker bill from the clutches of the Director of the Budget, where it seemed destined to oblivion, due to the Director's unexplained reluctance to give the measure his approval. Hearings on the bill were scheduled for some time in February before the Committee on Interstate and Foreign Commerce of the House, though they had not been held up to the 12th. The AMERICAN PUBLIC HEALTH ASSOCIATION was to be represented at these hearings by a committee, of which the associate editor is secretary.

The fact that hearings will have been held on this important measure is a step forward, even if there is no result except a favorable report. It seems unlikely that the bill can come to a vote either in the House or Senate in the short time left during this session, which ends on March 4. In that case, the fight will have to be begun all over again in the Seventieth Congress. The history of all social legislation of value has been one of years of effort before the result has been achieved and federal health correlation, so significant to national vitality, is likely to prove no exception. Sanitarians can, however, contribute to its promotion by conveying their views to their own Representatives in Congress, or by writing directly to Hon. James S. Parker, House Office Building, Washington, D. C.

The Milk Importation Bill—All during January the milk importation bill, H.R. 11768, which has passed the House, was considered from time to time by the Senate, with Senators Copeland and Lenroot doing much of the talking. Due to considerable opposition to the measure in New York and New England, a number of amendments have been suggested. Thus, it is proposed that the Secretary of Agriculture, in regulating and controlling imported milk, must accept certificates of city health departments having field inspection forces that the provisions of the act have been complied with, but this was voted down in the Senate on February 2, as was also an amendment to have the bill apply to milk in interstate commerce. Senator King of Utah attacked the measure on January 31 as arbitrary, dangerous, and usurpatory. The bill was passed February 4, most of the amendments having been defeated.

Progress on Other Bills—The House was evidently in an unusually agreeable mood on January 17, for it passed several minor measures of interest to sanitarians, without even objection by Mr. Blanton. These included: H.J.Res. 328, to provide $5,000 for expenses of delegates to the Congress of Military Medicine and Pharmacy, to be held in Warsaw; H.J.Res. 330, to provide $3,000 for expenses of delegates to the Eighth Pan American Sanitary Conference at Lima, Peru; H.J.Res. 331, to provide $2,000 per annum for membership of the United States in the International Office for Protection of Childhood at Montevideo, Uruguay; H.R. 16023, to pay for blood transfusions made by members or former members of the military establishment; H.R. 16077, relative to the content of army and navy rations; and S. 4537 to amend the Harrison Narcotic Act relative to narcotic permits in the Virgin Islands. The Senate agreed to this last on January 19. In

the Senate, the Committee on the District of Columbia has reported an amended medical practice bill (S. 4441), and a similar measure is before the House as H.R. 16653.

New bills of interest include: S. 5449 for a permanent appropriation for the Gorgas Memorial Institute of Tropical and Preventive Medicine in Panama; S. 5204 for the establishment of a United States college of narcotic education, with a student body appointed by members of Congress and the President, and necessary laboratories, libraries, and instructors; S. 5496 to prevent the use of poisonous materials in the denaturing of alcohol; and S. 5434 to create a Philippine Leprosy Commission.

The bill (H.R. 15601) for government control of medicinal liquor has been rejected by the House Committee on Ways and Means and representative Hull has introduced a new one, H.R. 16841. In discussing the first bill, Mr. Blanton took occasion to condemn the Secretary of the Treasury as a dripping wet.

Stimulation of Birth Registration—The U. S. Bureau of the Census has issued a press release dated February 4, 1927, which states that now, according to law in 35 states, the birth of every baby is registered. Only 4 states not now in the registration area have unsatisfactory laws. Dr. W. H. Davis, chief statistician of the Bureau of Vital Statistics calls attention to an effective way of stimulating birth registration, as employed in Pennsylvania. A physician who fails to report within the 10-day legal limit is given an opportunity to make affidavit as to reason for the delay, on payment of a fee of 50 cents. If he refuses, he has the alternative of going to court. "Results are usually prompt," says Dr. Davis.

Medical Service in Industries—The U. S. Bureau of Labor Statistics has recently made a study of the personnel activities carried on in various types of commercial and transportation enterprises. Medical and hospital services for industrial employers are discussed in detail in the *Monthly Labor Review* for January, 1927 (pages 7–19). This bureau has also done much work recently on national accident statistics.

Income Tax Advice—A very useful article entitled "The Physician's Income Tax—1927" appears in the *Journal of the American Medical Association* for January 15, 1927 (page 194). It was written by Dr. W. C. Woodward and can be read with profit by sanitarians. Among proper deductions cited are personal supplies, which include professional journals and certain technical books; dues to societies of a professional character, which would, of course, include the A.P.H.A.; and personal laboratory expenses. Traveling expenses to attend meetings of professional societies are not deductible.

State Health Legislation—The legislatures of some forty states are now in session, which means that a new flock of laws will be forthcoming to harass an already somewhat overlegislated nation. As usual, about 1,000 measures concerned with various aspects of public health will be introduced in the different state legislatures, and a small number, perhaps 10 per cent, will be enacted into law. While the associate editor would be glad to hear of any interesting developments in state health legislation, no systematic attempt will be made to follow it. An endeavor to summarize new state health laws after the sessions are over will be made as has been the custom during the past few years.

Among health bills before the Massachusetts Legislature are proposed acts: to reimburse cities and towns for care of persons ill with tuberculosis; regulation of tourist camps; controlling sale of dangerous caustics; licensing of milk pasteurization plants; authorization for purchase of radium for treatment of cancer.

The New York State Sanitary Code has been amended with respect to reports of death from communicable diseases. Local health officers must now forward a copy of such report immediately to the State Health Department. The new regulation is given in the department's *Health News* for January 24, 1927.

The annual message of Governor Smith of New York has much on public health in it. In fact, public health and allied matters require nearly three columns of the report of the message in the *New York Times*. The Governor recommends extension of county health units and announces that he proposes to hold a conference on this subject this winter. Many other public health matters are likewise discussed in an able manner by this progressive statesman, who evidently believes Disraeli was right when he said that the care of the public health is the first duty of the statesman. Would that the idea might become contagious.

Louisiana is reported as having a new law which requires the reorganization of parish boards of health and the appointment of licensed physicians skilled in sanitary science as

parish health officers. Several parishes, which correspond to counties in other states, may combine for health administration. If the parish authorities fail to take action, the state board of health may name the parish board of health.

In Tennessee the famous anti-evolution law has been held constitutional, though the court suggests its disgust with the whole business by stating that "all of us agree that nothing is to be gained by prolonging the life of this bizarre case." Yet there are numerous persons in many states who are making bigoted attacks on science and attempting to foist ridiculous theories of creation on school children and their teachers. This is the kind of tommyrot which all scientists, including sanitarians, should bend every energy to combat.

Cosmetics and Health—A legislative onslaught on deleterious cosmetics is now under way. The Association of Dairy, Food and Drug Officials has a committee on cosmetics which has prepared a model bill on this subject, and the Section on Dermatology of the American Medical Association is also interested in the matter, though the former body reports that it has had difficulty in securing coöperation from the latter. At any rate, the model bill to regulate the manufacture, sale and commercial use of cosmetics has been introduced in several state legislatures. This measure defines a cosmetic as "any substance or combination of substances represented, whether wholly or in part, as for use externally or by direct application for embellishing, cleansing, perfuming, conditioning or otherwise improving the appearance of the skin, lips, eyes, hair, nails or teeth of the human body," and such substances would be considered adulterated if they contain any salt, compound or derivative of lead, arsenic, mercury, or of hydrofluoric acid, any free sodium or potassium hydroxide in excess of one-half of one per cent, any amine derived from coal tar hydrocarbon, any methyl alcohol, or any other ingredient that renders its use injurious. The bill also has a provision regarding misbranding. The chairman of the committee in charge of this matter is Charles D. Howard, Chemist of the New Hampshire Board of Health. Other members are Dr. E. Monroe Bailey of Connecticut, Dr. S. Dana Hubbard of New York, I. L. Miller of Indiana, and R. O. Baird of North Dakota.

Miscellaneous Matters of Importance—An article by U. S. Senator Ransdell on his bill for a national institute of public health appears in *Good Housekeeping* for February. Surgeon General Cumming has a paper entitled "Public Health from the Federal Standpoint" in the January number of *Michigan Public Health*.

Decisions of the U. S. Supreme Court with respect to medical practice are summarized by the associate editor in an article in the *Journal of the American Medical Association* for January 29, 1927. This court refused recently to reconsider its decision with respect to medicinal liquor prescriptions.

Congressional legislation in favor of the metric system has been endorsed by the Executive Board of the A.P.H.A. The All-America Standards Committee, which is sponsoring the Britten-Gillett Metric Resolutions (H.J. 254-S.J. 107) has headquarters at 15th and K Streets, Washington, D. C., and pamphlets on the subject.

Under Michigan laws, free vaccinations must be paid by a city and not the county, according to Keho vs. Bd. of Auditors of Bay County, 209 N. W. 163.

An interesting and valuable article on the legal responsibility for water-borne disease, by Dr. I. D. Rawlings, and H. F. Ferguson, appears in *Public Works* for December, 1926.

CONFERENCES

April 7–9, American Association of Anatomists, Nashville, Tenn.

April 8–9, Western Physiotherapy Association, Kansas City, Mo.

April 14–16, American Society of Biological Chemists, Inc., Rochester, N. Y.

April 14–16, Federation of American Societies for Experimental Biology, Rochester, N. Y.

April 14–16, American Pharmacological Society, Rochester, N. Y.

April 14–16, American Physiological Society, Rochester, N. Y.

April 15–16, American Association of Pathologists and Bacteriologists, Rochester, N. Y.

May 9–11, American Child Health Association, Washington, D. C.

May 10–12, Medical Society of the State of New York, Niagara Falls, N. Y.

May 11–18, National Conference of Social Work, Des Moines, Ia.

May 16–20, American Medical Association, Washington, D. C.

May 23–28, National Tuberculosis Association, Indianapolis, Ind.